Decision 98-02-106 February 19, 1998

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Rulemaking on the Commission's Own Motion To Govern Open Access to Bottleneck Services and Establish A Framework for Network Architecture Development of Dominant Carrier Networks.	R.93-04-003 (Filed April 7, 1993)
Investigation of the Commission's Own Motion into Open Access and Network Architecture Development of Dominant Carrier Networks.	I.93-04-002 (Filed April 7, 1993)

INTERIM DECISION ADOPTING COST METHODOLOGY, EVALUATING THE HATFIELD COMPUTER MODEL, AND DECIDING OTHER ISSUES RELATED TO COST STUDIES OF PACIFIC BELL'S SYSTEM

In today's decision, we carry out the tasks that were identified for this phase of our "unbundling" proceeding in December of 1996.[1] First, although we conclude that the Total Element Long Run Incremental Cost (TELRIC) methodology set forth in the August 8, 1996 First Report and Order[2] of the Federal Communications Commission (FCC) is very similar to the Total Service Long Run Incremental Cost (TSLRIC) methodology adopted by this Commission in Decision (D.) 95-12-016 and applied in D.96-08-021, the TELRIC methodology has certain advantages that make it superior. Second, we conclude that Version 2.2.2 of the Hatfield Model, which is sponsored jointly by AT&T Communications of California, Inc. (AT&T) and MCI Telecommunications Corporation (MCI), has too many structural infirmities to allow it, and the hypothetical costs for the local exchange network it models, to be used in place of the TELRIC studies submitted by Pacific Bell (Pacific) on January 13, 1997. Third, we conclude that after approximately $677 million in downward adjustments are made (not including adjustments to switching investment), Pacific's TELRIC studies furnish a suitable basis for setting prices for unbundled network elements (UNEs). Finally, we have decided that, even though the question was left open in the December 18 ALJ Ruling, it would not be appropriate at this time to institute geographically deaveraged prices for UNEs.

---

[1] *See* Administrative Law Judge's Ruling Concerning Impact of the August 8, 1996 First Report and Order of the Federal Communications Commission in CC Docket No. 96-98 on the Scope of This Proceeding, issued December 18, 1996. This Ruling is hereinafter referred to as the December 18 ALJ Ruling.

[2] First Report and Order, In the Matter of the Implementation of the Local Competition Provisions in the Telecommunications Act of 1996, CC Docket No. 96-98 (FCC 96-325). Hereinafter, this document is referred to as the First Report and Order.

I. BACKGROUND OF TODAY'S DECISION

A. Decision 96-08-021 And The Events Leading Up To The December 18, 1996 ALJ Ruling

The "unbundling" phase of this proceeding has a long history, which was summarized extensively in D.96-08-021. (**Mimeo**. at 3-12.) That decision adopted costs for a wide array of Pacific's network services based on the TSLRIC methodology approved by this Commission in D.95-12-016. Even before D.96-08-021 was issued on August 2, 1996, the assigned ALJ had begun hearings to determine how these TSLRIC-based costs should be used to set prices for what were referred to as Basic Network Functions (BNFs) and services.

As explained in the December 18 ALJ Ruling, our plan for translating costs into prices (in conformance with the January 1, 1997 date set forth in Public Utilities (PU) Code § 709.5) was interrupted by the First Report and Order. The interruption came about as the result of two important differences between our approach and that of the FCC. First, the FCC prescribed a list of UNEs that differed somewhat from the BNFs that were identified as candidates for unbundling in the March 25, 1996 ALJ Ruling that defined the scope of the 1996 pricing hearings.[3] Second, and of equal importance, the FCC directed the States to use the TELRIC rather than the TSLRIC methodology in determining the costs for these network elements.

While all parties conceded that the FCC had authority under § 251(d)(2) of the Telecommunications Act of 1996 (TA 96) to prescribe the network elements to be unbundled, the FCC's authority to prescribe the methodology to be used for determining costs was vigorously disputed. Accordingly, the Regional Bell Operating Companies (RBOCs), joined by GTE Corporation (GTE)[4] and many States including

[3] Administrative Law Judge' Ruling Setting Forth The Scope Of Issues To be Decided In Pricing, Tariffing and Unbundling Hearings, issued March 25, 1996.

[4] GTE Corporation is the corporate parent of GTE California Incorporated (GTEC), which is a respondent in this proceeding.

California, challenged in several federal Courts of Appeal the assertion of FCC costing authority reflected in the First Report and Order. These cases were eventually consolidated in the United States Court of Appeals for the Eighth Circuit under the name of *Iowa Utilities Board v. Federal Communications Commission, et al.* (Nos. 96-3321 et al.).

As noted in the December 18 ALJ Ruling, the task of state public service commissions seeking to implement their own unbundling policies and those of TA 96 was greatly complicated by the Eighth Circuit's Order of October 15, 1996 in *Iowa Utilities Board v. FCC*,[5] which stayed, pending a final decision on the merits, various portions of the First Report and Order. Although the Eighth Circuit did not disturb the list of UNEs prescribed by the FCC pursuant to § 251(d)(2), it did stay those portions of the First Report and Order that (1) directed the use of the TELRIC methodology, (2) prescribed "proxy" prices to be used for UNEs until TELRIC cost studies could be completed, and (3) mandated the use by state commissions of what the Eighth Circuit called a "pick and choose" rule.

The December 18 ALJ Ruling concluded that in view of the October 15 Stay Order, this Commission was free, if it wished, to set UNE prices based on the TSLRIC costs adopted in D.96-08-021. However, the Ruling continued, it was also clear that costs for additional network elements would have to be established, since (1) the FCC's list of UNEs was broader than the list of BNFs set forth in the March 25, 1996 ALJ Ruling, (2) TA 96 gave the FCC the power to prescribe such a list, and (3) the Eighth Circuit had not stayed any aspect of the FCC's list. (**Mimeo**. at 5-6, 11 n. 13.) In view of the possibility that the Eighth Circuit might eventually uphold, in its decision on the merits, the FCC's authority to prescribe a costing methodology for use in setting UNE prices, the December 18 Ruling concluded:

[5] 109 F.3d 418 (8th Cir.), *motion to vacate stay denied*, 117 S.Ct. 429 (1996). This decision is hereinafter referred to as the October 15 Stay Order.

> "Thus, even though this Commission is not obliged under the October 15 Stay Order to use TELRIC in developing costs for the additional network elements that must be unbundled, it is a reasonable question whether there are advantages to doing so." (**Mimeo.** at 7.)

After reviewing the differences between TELRIC and TSLRIC as described in the parties' comments, the December 18 Ruling concluded that there were good reasons for requiring Pacific[6] to use TELRIC in developing its costs for the additional UNEs. First, because TELRIC requires that shared family and common costs[7] be allocated as much as possible to individual network elements, its use promised to reduce the size of the total "pot" of shared and common costs reported under TSLRIC, an issue that had been particularly contentious in D.96-08-021. (**Id.** at 10-11.) Second, TELRIC requires that retail costs not be included in the costs of network elements, and the December 18 Ruling agreed with the FCC that retail costs "are not attributable to the production of network elements that are offered to interconnecting carriers." (**Id.** at 12, quoting paragraph 691 of the First Report and Order.)[8] Third, the December 18 Ruling noted that in the event the Eighth Circuit were to uphold the FCC's authority to require the

---

[6] The December 18 Ruling noted that in view of the conclusion in D.96-08-021 that GTEC's cost studies did not adequately conform to the TSLRIC methodology, it would be premature to order GTEC to submit TELRIC studies. The Ruling stated that a schedule for the submission by GTEC of TELRIC studies would be established after GTEC submitted the workplan for new cost studies required by Ordering Paragraph (OP) 4 of D.96-08-021. (**Id.** at 13, n. 16, 32-34.) The ALJ Ruling setting such a schedule and critiquing GTEC's workplan was issued on June 18, 1997, and GTEC submitted new cost studies on September 15, 1997.

[7] Shared and common costs are defined in the Consensus Costing Principles (CCPs) set forth in Appendix C to D.95-12-016. "Shared" costs are defined as "costs . . . attributable to a group of outputs but not specific to any one within the group, which are avoidable only if all outputs within the group are not provided." Appendix C, p. 7. "Common" costs are defined as "costs that are common to all outputs offered by the firm," and CCP No. 5 states that "common costs, if any, are not part of a TSLRIC study, except for a TSLRIC study of the firm as a whole." In view of their nature, recognition of common costs "will be treated as a pricing issue." **Id.** at 4-5, 7.

[8] As noted in Part II.B. of the text, retail costs will continue to be recovered by Pacific in its sale of services, which we expect will continue to make up the bulk of Pacific's revenues as local exchange competition develops.

use of TELRIC by the States, having TELRIC studies in hand would reduce delay later in the proceeding. (**Id.** at 9.) Accordingly, the December 18 Ruling directed Pacific to submit "TELRIC refinements to the existing TSLRIC cost studies," as well as "new TELRIC studies for the additional network elements prescribed by the FCC," no later than January 13, 1997. (**Id.** at 12-13.) The other parties to the proceeding were invited to file opening and reply comments on the new cost studies, which would be followed by "a proposed decision on the consistency of the new studies with TELRIC principles." (**Id.** at 13-14.)

The December 18 ALJ Ruling also dealt with several other issues raised by the First Report and Order. Most significantly, the Ruling concluded that "the propriety of the Hatfield Model", along with "costing results based thereon," should be litigated at the same time that Pacific's new TELRIC studies were being considered. The Ruling concluded this was appropriate, because (1) there had not been enough time to consider the Hatfield Model during the pricing hearings held in July and August of 1996, and (2) it was not clear when, if ever, the FCC would commence the computer model evaluation proceeding discussed in the First Report and Order. (**Id.** 20-22.)

The December 18 Ruling also gave the parties direction on the issue of whether they should report their costs on a geographically deaveraged basis, as the FCC had required in the First Report and Order. The Ruling concluded that although this requirement need not be complied with under the Eighth Circuit's October 15 Stay Order, it would nonetheless be helpful to have geographically deaveraged data. However, Pacific and GTEC (when it submitted studies) were given their choice as to the form of geographic deaveraging they would present, and all parties were put on notice that "the fact we are permitting the LECs to choose what form of deaveraging to include in their cost studies should not be taken as an endorsement of any particular

approach, or as an indication that the network element prices to be adopted . . . will necessarily be geographically-deaveraged." (**Id.** at 26.)[9]

The December 18 Ruling recognized that the preparation of new cost studies, choosing between TELRIC and TSLRIC, and evaluating the Hatfield Model would not be the end of UNE pricing issues. This was so, the Ruling concluded, because of the far-reaching impacts of the network element known as "Operations Support Systems" (OSS). The First Report and Order had directed that OSS be unbundled by January 1, 1997, but the December 18 Ruling recognized that cost studies for OSS would in all likelihood take longer to prepare, principally "because the parties have not yet agreed on just what comprises the OSS element, and on what form of data base access should be granted." (**Id.** at 14.)[10] The Ruling directed that a joint workshop be held with the Local Competition docket (Rulemaking (R.) 95-04-043/Investigation (I.) 95-04-044) for the purpose of defining the OSS element. The Ruling also pointed out that the costing of OSS would have a large impact on the question of non-recurring costs (NRCs), an issue that had consumed substantial attention in D.96-08-021:

> "We recognize that once the OSS element is defined, it will almost certainly change Pacific's [NRCs], because of the time savings that can be expected from a more automated ordering system. Thus, once the OSS element has been defined and costed, the NRCs adopted for Pacific in D.96-08-021 will need to be modified. We will solicit comments on the necessary modifications (and how they should be implemented) once the parties have made some progress in defining the OSS element in the workshop." (**Id.** at 15, n. 19.)

---

[9] To provide for the eventuality that the Commission might choose not to have geographically-deaveraged network element prices, both LECs were instructed to "provide a statewide average cost for each network element for which geographically-deaveraged costs are submitted." (**Id.** at 27.)

[10] The FCC subsequently agreed with this assessment. On December 13, 1996, the FCC issued its Second Order on Reconsideration in CC Docket No. 96-98 (FCC 96-476), which held that as long as the LECs were deemed to be making satisfactory progress toward providing OSS pursuant to a schedule approved by the relevant state commission, that would be considered satisfactory compliance with 47 C.F.R. § 51.319 (f), and enforcement action would not be instituted by the FCC. (**Mimeo.** at 7, para. 11.)

Finally, the December 18 Ruling concluded that in view of the substantial impact the First Report and Order seemed certain to have on the pricing of UNEs, and the fact that the parties had not had the benefit of D.96-08-021 when they filed their pricing testimony in the summer of 1996, supplementary pricing testimony would be needed. This testimony would be submitted, and supplementary pricing hearings would be held, once the interim decision on Pacific's TELRIC studies had been issued. (**Id.** at 13-14, 22-24.)[11]

Pursuant to the schedule set forth in the December 18 Ruling, Pacific submitted its TELRIC cost studies on January 13, 1997. After a series of ALJ Rulings granting extensions of time, parties submitted their opening comments (on all issues other than geographic deaveraging) on March 18, 1997.[12] On March 25, 1997, AT&T and MCI submitted joint supplementary comments on geographic deaveraging issues. Reply comments on all issues were submitted on April 15, 1997.[13]

---

[11] The lengthy December ALJ 18 Ruling also resolved a number of other issues. It rejected arguments that Pacific should have to change a number of cost study assumptions that had been accepted in D.96-08-021, (**id.** at 16-18), or should have to submit so-called "stand alone" cost studies for UNEs, (**id.** at 18-19). It deferred consideration of whether the differences between TSLRIC and TELRIC necessitated a review of the Commission's "imputation" rules, (**id.** at 27-30), noted that resale cost studies would be the subject of a separate ALJ ruling in the resale phase of the OANAD proceeding, (**id.** at 30-32), and concluded that a separate schedule would have to developed for the submission of TELRIC studies by GTEC, (**id.** at 32-34.)

[12] Opening comments on Pacific's cost studies were submitted by the Office of Ratepayer Advocates (ORA), The Utility Reform Network (TURN), Cox California Telcom, Inc. (Cox) and AT&T Wireless Services, Inc. (AT&T Wireless). Joint opening comments on Pacific's studies were submitted by AT&T and MCI, and by the California Cable Television Association, ICG Telecom Group, Inc. and Teleport Communications Group, Inc. These latter three parties are referred to collectively as the Facilities-Based Commenters (FBC).

Pacific and GTEC both submitted opening comments on the Hatfield Model on March 18, 1997.

[13] Reply comments were submitted by Pacific, GTEC, ORA, TURN, AT&T Wireless and Cox. Joint reply comments were submitted by AT&T and MCI, and by the FBC.

Many of the procedures employed by the parties in preparing these comments were the same as those employed in connection with the TSLRIC studies considered in D.96-08-021. In particular, since much of the data in Pacific's cost studies was submitted under a claim that it was confidential and proprietary,[14] parties submitted both "unredacted" and "redacted" versions of their comments. The unredacted versions directly cite and discuss Pacific's confidential data, while the redacted versions of the comments do not cite specific data or, in many cases, give specific figures.[15]

Issues concerning confidential and proprietary data were more complicated in connection with Pacific's TELRIC studies than with its TSLRIC studies, because--as explained in Section IV.A. --parties were granted access early in 1997 to a heretofore highly confidential model, the Switching Cost Information System (SCIS) model, that is used to compute switching investment. As explained in Section IV.A., access to the SCIS model was granted only to parties who--in addition to entering into a suitable nondisclosure agreement with Pacific--also entered into a special nondisclosure agreement with Pacific and the third-party switch vendors governing the treatment of data deemed confidential and proprietary by the switch vendors.[16]

---

[14] Data that Pacific claims is confidential and proprietary is subject to a form of nondisclosure agreement set forth in the Administrative Law Judges' Ruling Concerning Proposed Protective Order of GTE California Incorporated, issued November 16, 1995. This ruling is hereinafter referred to as the November 16, 1995 ALJs' Ruling.

[15] On April 1, 1997, the assigned ALJ issued a ruling that granted motions by several parties to file unredacted versions of their comments under seal, pursuant to G.O. 66-C. *See* Administrative Law Judge's Ruling Granting Motions To Place Pacific Bell's TELRIC Studies and Comments Thereon Under Seal, And To File Certain Comments Late.

[16] The issues surrounding access to the SCIS model and the nondisclosure agreement governing protection of third-party switch vendor data are discussed in the Administrative Law Judge's Ruling Directing Pacific Bell To Produce the Switching Cost Information System (SCIS) Computer Model Subject To A Protective Agreement, issued February 24, 1997. This ruling is hereinafter referred to as the February 24, 1997 ALJ Ruling. The approved form of agreement protecting third-party confidential information is attached as Appendix A to the February 24, 1997 ALJ Ruling.

In this decision, we have dealt with the issues raised by data designated as confidential and proprietary in the same way we did in D.96-08-021. In other words, where we deem it helpful to give the reader some idea of the dollar impact of our decision, we have tried as much as possible to refer to data in the aggregate or by giving orders of magnitude, so that the numbers we cite cannot be used, standing alone, to "back out" truly sensitive, proprietary matter. Our citations to the parties' comments, however, are to the unredacted versions.

As in D.96-08-021, we recognize that making the adjustments we are ordering to Pacific's TELRIC studies will require that affected parties have access to material that has been designated by Pacific as confidential and proprietary. In order to prevent this material from falling into unauthorized hands, we have, as in D.96-08-021 (**mimeo.** at 12-13), prepared what we refer to as a Compliance Reference Document (CRD). This CRD will be made available only to parties who have signed a nondisclosure agreement with Pacific.[17] A redacted version of the CRD is attached to this decision as Appendix A.

[17] In the event a party who has not signed a nondisclosure agreement with Pacific seeks access to the CRD, that party should first attempt to negotiate an appropriate nondisclosure agreement with Pacific. In the event this effort is unsuccessful, the party should file a motion pursuant to Commission Resolution ALJ-164. In such a motion, the burden of proof will be on the moving party to demonstrate why access should be granted, and what steps the party is prepared to take to ensure that the confidential data at issue is safeguarded.

Because the CRD does not require adjustments to Pacific's cost studies that involve the use of the switch vendors' third-party proprietary data, we do not need to address the case in which a party has not signed a nondisclosure agreement either with Pacific or with the third-party switch vendors.

B. Owing To The Creation Of A Separate OSS/NRC/Changeover Phase, Today's Cost Determinations Will Not Allow Us To Develop Final UNE Prices In The Upcoming Supplementary Pricing Hearings

As provided for in the December 18 ALJ Ruling, workshops intended to define what systems make up OSS were held during the first four months of 1997.[18] While these workshops made considerable progress, they have also made it clear that defining and costing OSS presents even more difficult issues than had been envisioned last December. Among other things, the workshops have demonstrated to the ALJs who ordered them and the Commission staff who presided over them that (1) what is needed in an OSS system differs depending on whether one is a reseller of ILEC service or a facilities-based provider, (2) the forms of OSS systems that will be available on a long-term basis differ significantly from what can be put into service in the near-term, and (3) OSS is an issue that impacts resale costs as well as UNE costs.

For these and other reasons, the ALJs assigned to this and the Local Competition dockets issued a Joint Ruling on August 22, 1997 that established a separate phase of this proceeding to deal with OSS and NRCs.[19] We agree with the judgment reached in the Joint Ruling that this new phase should determine both the costs of OSS and the effects of such costs on NRCs, and that these determinations should be used as an input in the UNE and resale phases of this proceeding to set "final" prices for UNEs and resale service.

However, because the schedule established by the ALJ for the new OSS/NRC/Changeover phase of this proceeding does not contemplate the finalizing of these costs before the supplementary pricing hearings for Pacific will begin, the parties have been asked to submit interim pricing proposals for OSS and NRCs that will be considered in the supplementary pricing hearings. Although we regret that it will not

[18] Prehearing Conferences (PHCs) concerning OSS issues were held on March 11, March 25, and May 13, 1997. Workshops were convened on March 14 and April 29-May 2, 1997.

[19] Administrative Law Judges' Joint Ruling, issued August 22, 1997.

be possible to have final OSS and NRC costs in hand by the time the supplementary pricing hearings begin, today's decision represents significant progress toward developing UNE prices for Pacific.

C. The Eighth Circuit's Ruling On The Merits In *Iowa Utilities Board v. FCC*

The Eighth Circuit issued its decision on the merits concerning the challenges to the First Report and Order on July 18, 1997. (*Iowa Utilities Bd. v. F.C.C.,* 120 F.3d 753 (8th Cir. 1997).) The Eighth Circuit's decision upholds the judgments about the boundaries of state and federal jurisdiction reflected in the October 15 Stay Order, but rejects most of the other challenges that the RBOCs and GTE had raised to the First Report and Order.

On the critical question of whether TA 96 gives the FCC authority to require the use of TELRIC by the States, the Eighth Circuit's answer was an emphatic and unambiguous "no". The Court began its analysis by summarizing the provisions of TA 96 that confer pricing authority on the States:

> "The petitioners point to the language contained in subsections 252(c)(2) and 252(d) to support their claim that the Act directly grants the state commissions the authority to determine the rates involved in implementing the local competition provisions of the Act. Indeed, subsection 252(c)(2) requires a *state commission* to 'establish any rates for interconnection, services, or network elements, according to subsection (d) of this section.' Meanwhile, subsection 252(d), entitled 'Pricing standards,' lists the requirements that the *state commissions* must meet in making their determinations of the appropriate rates for interconnection, unbundled access, resale, and transport and termination of traffic. . . These statutory provisions undeniably authorize the state commissions to determine the prices an incumbent LEC may charge for fulfilling its duties under the Act." (120 F.3d at 794; citation omitted; emphasis in original.)

The Court went on to reject the FCC's claim that other federal statutory provisions--especially § 251(d)(1) of TA 96 and §§ 154(i), 201(b) and 303(r) of the Communications Act of 1934--gave the FCC "parallel authority" to issue "regulations governing . . . rate-making methods":

> "Despite the FCC's contentions, we are not convinced that these provisions supply the FCC with the authority to issue regulations governing the price of the local intrastate telecommunications services that the incumbent LECs are now legally obligated to provide to their new competitors. Subsection 251(d)(1) provides that '[w]ithin 6 months after February 8, 1996, the Commission shall complete all actions necessary to establish regulations to implement the requirements of this section' . . . The FCC believes this provision supplies the Agency with overarching authority to regulate all aspects of section 251 and reasons that because subsection 251(c) requires rates for interconnection, unbundled access, and collocation to be 'just, reasonable, and nondiscriminatory,' . . . the FCC has the power to regulate these rates and any other rates mentioned in section 251. We are not persuaded by the FCC's interpretation. We believe that subsection 251(d)(1) operates primarily as a time constraint, directing the Commission to complete expeditiously its rulemaking regarding only the areas in section 251 where Congress expressly called for the FCC's involvement. Nowhere in section 251 is the FCC authorized specifically to issue rules governing the rates for interconnection, unbundled access, and resale, and the transport and termination of telecommunications traffic.
>
> "The Commission's reliance on general rulemaking provisions that predate [TA 96] . . . fares no better. While subsection 201(b) does grant the FCC jurisdiction over charges regarding communications services, those services are expressly limited to interstate or foreign communications services by subsection 201(a). . . Consequently, subsection 201(b) does not provide the Commission with the authority to regulate the rates of local intrastate phone service[,] and neither do subsections 154(i) or 303(r). Both of these subsections merely supply the FCC with ancillary authority to issue regulations that may be necessary to fulfill its primary directives contained elsewhere in the statute." (**Id.** at 794-95; footnote and citations omitted; emphasis supplied.)

After completing its review of the basic statutory provisions, the Court also rejected an argument by the FCC that it could impose TELRIC on the States despite § 2(b) of the Communications Act of 1934, which provides that "nothing in this chapter shall be construed to apply to or to give the [FCC] jurisdiction with respect to . . . charges, classifications, practices, services, facilities, or regulations for or in connection with intrastate communications service."

In *Louisiana Pub. Serv. Comm'n v. FCC*, 476 U.S. 355, 370 (1986), the Supreme Court held that § 2(b) "fences off" intrastate matters from FCC jurisdiction, and that there are only two ways in which this statutory presumption can be overcome. The Eighth Circuit described these two ways as follows:

> "The Supreme Court emphasized that section 2(b) constitutes an explicit congressional denial of power to the FCC and suggested that Congress could override section 2(b)'s command only by unambiguously granting the FCC authority over intrastate telecommunications matters or by directly modifying section 2(b). . . The only other gate through the 2(b) fence is the 'impossibility' exception, which has evolved out of the Court's opinion in *Louisiana.* This quite narrow exception provides that the FCC may preempt state regulation or intrastate telecommunications matters only when (1) it is impossible to separate the interstate and intrastate components of the FCC regulation[,] and (2) the state regulation would negate the FCC's lawful authority over interstate communication." (**Id.** at 796.)

The Eighth Circuit held that neither the "unambiguous" nor the "impossibility" exceptions applied. With respect to the "unambiguous" exception, the Court said:

> "[W]e believe that the *Louisiana* decision indicates that in order to qualify for the 'unambiguous' exception to section 2(b), a statute must *both* unambiguously apply to intrastate telecommunications matters *and* unambiguously direct the FCC to implement its provisions. In *Louisiana*, section 220(b) clearly passed the second prong but failed to meet the first prong. In the present case, we have the opposite situation: the pricing provisions of sections 251 and 252 clearly apply to intrastate telecommunication service, but they do not unambiguously call for the FCC's participation in setting the rates. To the contrary, the Act specifically calls for the state commissions, not the FCC, to determine the rates for interconnection, unbundled access, resale, and transport and termination of traffic." (**Id.** at 798.)

The Court also rejected the FCC's attempt to bring itself within the "impossibility" exception. After pointing out that "telecommunication ratemaking traditionally has been capable of being separated into its interstate and intrastate components," the Court concluded that "the FCC has not demonstrated that the states' authority to establish the rates in connection with the local competition provisions of the Act would negate any valid authority the Commission has over interstate

communications or impede any of its interstate regulatory goals." The impossibility exception depends upon a preemption analysis, the Court continued, and it is clear under TA 96 that "Congress did not intend for the FCC to issue any pricing rules, let alone preempt state pricing rules regarding the local competition provisions . . ." (**Id.** at 798-99.)

In view of its conclusion that the FCC was without authority under any theory to impose TELRIC upon the States, the Court reaffirmed its conclusion in the October 15 Stay Order that the FCC's "pricing rules" must be set aside.[20]

The Eighth Circuit's decision makes many other determinations about the rules promulgated by the FCC in the First Report and Order, and some of these determinations affect various aspects of our decision today. With the exception of OSS[21] and "rebundling", we discuss these other determinations in the sections to which they pertain.

---

[20] The "pricing rules" were defined by the Court as 47 C.F.R. §§ 51.501-51.515 (inclusive), 51.601-51.611 (inclusive), and 51.701-51.717 (inclusive). The only exceptions to this were § 51.515(b), which the Eighth Circuit held in *Competitive Telecommunications Ass'n v. F.C.C.*, 117 F.3d 1068 (8th Cir. 1997), was a "legitimate interim rate for interstate access charges," and § 51.701, 51.703, 51.709(b), 51.711(a)(1), 51.715(d) and 51.717 insofar as they apply to Commercial Mobile Radio Service (CMRS) providers. (**Id.** at 800, n. 21.)

[21] The RBOCs and GTE had challenged the inclusion of OSS and access to data bases in the list of UNEs on the ground that TA 96's definition of "network element" was confined to a "facility or equipment used in the provision of a telecommunications service," and specifically excluded services themselves.

The Eighth Circuit rejected the ILECs' argument. First, the Court pointed out that services could not be offered to the public without "the technology and information used to facilitate ordering, billing, and maintenance of phone service – the functions of [OSS]." (**Id.** at 808.) Second, the definition of "network element" specifically referred to "databases, signaling systems, and information sufficient for billing and collection." Third, even if Congress had excluded "services" from the definition of "network element", that did not mean the FCC was foreclosed from including some services on the UNE list:

> "Simply because these capabilities can be labeled as 'services' does not convince us that they were not intended to be unbundled as network elements. While section 251(c)(4) does provide for the resale of telecommunications services, it does not establish resale as the exclusive means through which a competing

Footnote continued on next page

With respect to rebundling, the Eighth Circuit held (in its October 14, 1997 order granting rehearing) that, as the RBOCs and GTE had urged, an ILEC cannot be compelled to offer UNEs that have been "preassembled" on a platform. In so ruling, the Eighth Circuit set aside 47 C.F.R. § 51.315 (b)-(f) and said:

> ". . . §251(c)(3) does not permit a new entrant to purchase the incumbent LEC's assembled platform(s) of combined network elements (or any lesser existing combination of two or more elements) in order to offer competitive telecommunications services. To permit such an acquisition of already combined elements at cost based rates for unbundled access would obliterate the careful distinctions Congress has drawn in subsections 251(c)(3) and (4) between access to unbundled network elements on the one hand and the purchase at wholesale rates of an incumbent's telecommunications retail services for resale on the other." (**Id.** at 813.)

In his March 4, 1997 Ruling, the assigned ALJ noted the importance of the rebundling issue, and preliminarily determined that an extra week of hearing time should be allotted to consider it. In light of the above-quoted ruling on rebundling - and our duty to set just and reasonable rates for UNEs under § 252(d) of TA 96 - we conclude that it is appropriate to deal with the implications of the rebundling issue for the pricing of UNEs.[22] We will therefore leave it to the discretion of the ALJ, working

---

> carrier may gain access to such services. We agree with the FCC that such an interpretation would allow the incumbent LECs to evade a substantial potion of their unbundling obligation under subsection 251(c)(3)." (**Id.** at 809.)

In view of the Eighth Circuit's decision to uphold the FCC's designation of OSS as a UNE, there is no need to disturb the August 22, 1997 ALJs' Ruling that established a separate OSS/NRC/Changeover phase for this proceeding.

[22] In their January 16, 1998 joint opening comments on the assigned ALJ's December 23, 1997 draft decision (DD), AT&T and MCI suggest that we are without jurisdiction to consider the rebundling issue in the supplementary pricing hearings, because to do so would constitute a "collateral attack" on our previous decisions concerning the Pacific-AT&T and Pacific-MCI arbitration agreements. (AT&T-MCI Joint Opening Comments, pp. 28-30.)

This argument is without merit. First, as GTEC has pointed out in its January 26, 1998 reply comments on the DD, the United States Supreme Court did not, in its order granting certiorari, stay any aspect of the Eighth Circuit's decision, including the rebundling discussion. Second,

Footnote continued on next page

in consultation with Commissioner Duque, to determine how the Eighth Circuit's rebundling directive should be implemented in the supplementary pricing hearings that will follow this decision.

Another important development must be noted with respect to *Iowa Utilities Bd. v. FCC.* On January 26, 1998, the United States Supreme Court granted the petitions for writs of certiorari that had been filed by the United States, AT&T and others seeking review of the Eighth Circuit's decision. *AT&T Corp., et al. v. Iowa Utilities Board, et al.*, Nos. 97-826 et al. In the event the Supreme Court reverses the Eighth Circuit on any material issue, we will make appropriate changes to the course of action we are pursuing in this docket.

II. SHOULD THE COMMISSION ADOPT THE TSLRIC OR TELRIC METHODOLOGY AS THE BASIS FOR DETERMINING THE COSTS OF UNBUNDLED NETWORK ELEMENTS?

As noted above, the December 18 ALJ Ruling concluded that there were some obvious advantages to using the TELRIC costing approach, even though the Eighth Circuit had ruled in the October 15 Stay Order that the FCC lacked authority to impose TELRIC upon the States. The assigned ALJ therefore ordered Pacific to submit TELRIC studies for all UNEs specified by the FCC (except OSS) no later than January 13, 1997. (**Mimeo.** at 13.) The ALJ also stated that once the Commission had evaluated these studies, it would choose between the TELRIC and TSLRIC methodologies. (**Id.** at 29, 35.) The time for making this choice has now arrived.

It is clear that under the decision in *Iowa Utilities Bd. v. F.C.C.*, we may set network element prices using a long-run incremental cost methodology, because the Eighth Circuit rejected arguments by the RBOCs and GTE that basing prices on any

---

Resolution ALJ-174, issued May 21, 1997, expressly provides that "all agreements arrived at through arbitration [shall] include the provision that all arbitrated rates for unbundled elements will be subject to change in order to mirror the rates adopted in the Commission's OANAD pricing decision or decisions." (ALJ-174, p. 2.) Under this language, AT&T and MCI are bound by any new determination we make with respect to rebundling in the pricing decision (or decisions) that will be issued after the supplementary pricing hearings.

measure other than direct embedded costs would necessarily constitute a "taking".[23] Moreover, we believe that both the TSLRIC and TELRIC methodologies properly reflect long-run incremental cost principles, and differ only in their "cost objects".

After reviewing the new cost studies submitted by Pacific on January 13, we have concluded – for many of the same reasons suggested in the December 18 ALJ Ruling – that TELRIC is the preferable methodology. As explained below, we believe that TELRIC is preferable because it reduces the total amount of unassigned shared and common costs, eliminates retail costs from UNE prices, and makes the detection of cross-subsidization easier. However, the version of TELRIC that we will use to set UNE prices for Pacific is not the rigid version of that methodology prescribed in the First Report and Order.[24] Until the supplementary pricing hearings are concluded, for example, we will reserve judgment on (1) the extent to which demand elasticities and the aggregate level of demand for particular UNEs should be taken into account in

---

[23] In its decision on the merits, the Eighth Circuit specifically noted the "takings" challenge made by the incumbent LECs to the TELRIC methodology:

> "Many of the incumbent LECs complain that the TELRIC methodology does not incorporate their 'historical' or 'embedded' costs . . . into the cost figure that forms the basis for determining the rates that the incumbent LECs may charge. . . . The incumbent LECs argue that the TELRIC method underestimates their costs to provide interconnection and unbundled access and results in prices that are too low, effectively requiring them to subsidize their new local service competitors." (120 F.3d at 793, n. 8; citations omitted.)

Although the Eighth Circuit declined to pass upon this contention when it set aside the FCC's pricing rules solely on jurisdictional grounds, (**id.** at 800), the Court later stated that, even though the LECs' taking claims were not ripe for review, it was "skeptical" that the limited number of FCC unbundling rules it was upholding would "effect an actual taking". (**Id.** at 818.)

[24] For example, contrary to the directive contained in paragraph 682 of the First Report and Order, we are not requiring Pacific to assign shared and common expenses such as Inter-Office Facilities, Inter-Exchange Carrier Expenses and Network Engineering Expenses to individual network elements. We have decided not to order this because, in our judgment, attempting to assign these costs to individual UNEs would be inconsistent with the Consensus Costing Principles adopted in D.95-12-016, which recognize that in a multi-product firm such as a local exchange carrier, legitimate shared and common expenses do exist.

setting prices for UNEs,[25] and (2) whether it is appropriate to establish UNE prices based on a uniform markup over TELRIC costs for all network elements, or whether the markup should vary from element to element. In addition, as explained in Section IX.E. of this decision, we have decided that Pacific's prices should not be geographically-deaveraged at this time.

A. The TELRIC Methodology Is Preferable Because It Minimizes the Total Of Unassigned Shared Family and Common Costs

In the December 18 Ruling, the assigned ALJ pointed out that that one of the apparent advantages of TELRIC over TSLRIC was that the former promised to minimize the amount of unassigned "shared family" and "common" costs. This was attractive because, of the $5.2 billion in costs reported by Pacific under the TSLRIC methodology, about $2 billion were classified as shared and common. (D.96-08-021, **mimeo.** at 15-16.) The ALJ noted that this large percentage of shared and common costs had been an extremely contentious issue in the proceedings leading up to D.96-08-021, and that the use of TELRIC might well reduce the level of contentiousness:

> "[T]he use of TELRIC promises to narrow significantly the scope of one of the most contentious issues in this proceeding: viz., how TSLRIC shared and common costs should be recovered in pricing. The comments on the July 2, 1996 Proposed Decision (PD) in this docket made clear that this was one of the key issues concerning the cost studies, largely because (1) the percentage of total LEC costs treated as 'shared family' or 'shared common' was high, and (2) there was widespread concern that excluding such shared and common costs from the TSLRICs for particular services would result in unreasonably low price floors for those services, thus stifling competition . . . D.96-08-021 took note of the latter concern and stated that because of it, 'we will allow the parties to litigate in the [pricing] hearings the extent to which shared family costs should be

[25] *See* Administrative Law Judge's Ruling Decided Issues Raised At January 28, 1997 Prehearing Conference, Granting One-Week Extension Of Time For Filing Opening Comments, and Setting Schedule For Proceeding, issued March 4, 1997 (March 4 ALJ Ruling) (**mimeo.** at 3-4); Administrative Law Judge's Ruling Setting Out Limits Of Permissible Discovery In Response To Discussion At July 1, 1997 Hearing, issued August 25, 1997 (**mimeo.** at 6-7).

> included in price floors.' . . . " (December 18 ALJ Ruling at 10; citations omitted.)

Now that we have examined the new cost studies submitted by Pacific on January 13, it is apparent that the judgment reflected in the December 18 Ruling was correct. Although many parties continue to dispute the validity of the amount of shared and common costs reported by Pacific in its TELRIC studies,[26] the total of such costs has been reduced from $2 billion to about $1.2 billion. Moreover, while we are directing Pacific to provide additional justification for its treatment of about $100 million of this total, we believe that in general, Pacific's treatment of shared and common costs in its TELRIC studies is reasonable. The smaller "pot" of shared and common costs that the TELRIC methodology produces continues to be a major factor in its favor.

B. The TELRIC Methodology's Elimination Of Retail Costs From The Price Of Unbundled Network Elements Is A Factor In Its Favor

As the December 18 ALJ Ruling observed, the TSLRIC studies adjudicated in D.96-08-021 included in the "shared family" category a substantial amount of "retail costs"; i.e., the costs that an LEC incurs to provide services to its end-user customers, such as advertising, marketing, and billing expenses. (**Mimeo.** at 11.) The December 18 Ruling noted that in D.96-08-021, "the issue of how to treat retail costs was essentially deferred, because resolving it was not critical to deciding the basic costing issues before the Commission." (**Id.** at 12.) However, the December 18 Ruling continued:

> "[A]s staff, the Assigned Commissioner's office and [the ALJ] have all had an opportunity to reflect on this question, it seems reasonable to conclude that retail costs should not be recovered in the pricing of unbundled network elements, because – as stated by the FCC – retail costs 'are not

[26] For example, in their March 18 Opening Comments, AT&T and MCI refer to the total of unassigned shared and common costs in Pacific's TELRIC studies as the "billion dollar bucket" and argue that it should not exceed $600 million. (AT&T/MCI Opening Comments, pp. 15-22.) For a discussion of these issues, see Section V.A.3. *infra.*

> attributable to the production of network elements that are offered to interconnecting carriers.' ([First Report and Order], para. 691.) When retail costs are removed from the shared and common cost categories in the TSLRIC studies submitted by [Pacific] . . . the result should begin to look like a TELRIC study." (**Id.)**

Now that we have had an opportunity to examine Pacific's TELRIC studies, we agree with the December 18 ALJ Ruling that the removal of retail costs from the shared and common categories is a factor in favor of TELRIC. As the December 18 Ruling anticipated, the removal of retail costs from the "shared family" category reduces the size of that category by approximately $500 million. Although we believe that Pacific improperly included some retail costs in the "common" costs it reported (as explained below in Section V.C.2.), in general, we believe that Pacific correctly implemented the TELRIC rules concerning retail costs.

The comments submitted by the parties have also helped to persuade us that it is appropriate to exclude retail costs from the prices that Pacific's competitors must pay for UNEs. As Drs. Nina Cornell and Nicholas Economides state in their March 18, 1997 declaration accompanying the Opening Comments of AT&T and MCI, the failure to exclude LEC retail costs from the price of UNEs could result in double-payment of such costs by new entrants:

> "While TSLRIC and TELRIC costs are based on the same cost concept, there are some differences in how the two types of costs would be estimated. As noted, TELRIC looks at the costs of an [ILEC] using the different network elements as the 'cost objects'. . . [LECs] do not typically sell network elements to end users, but instead offer services that are supplied using those various network elements in various proportions. Thus, for retail services, TSLRIC is the appropriate cost concept. For the provision of [UNEs] to entrants, however, TELRIC is the appropriate cost concept."
>
> "Because [LECs] do not typically sell network elements to end users, but instead sell them services, TELRIC is a cost concept that refers to an intermediate level of production, or to goods sold wholesale. Therefore TELRIC costs should not include any of the costs of supplying services to end user customers. This is an important difference between the two cost concepts. . .

> "An entrant using [UNEs] as the inputs for its end user services can compete with the incumbent either on the level of retailing, or on the way it combines those elements to provide services, or both. *If the entrant has to incur both its own retailing costs as well as having to pay some of the incumbent's retailing costs, it faces a barrier to entry*." (3/18 Joint Declaration of Drs. Cornell and Economides, pp. 17-18, paras. 52-54; emphasis supplied.)

It is important to note here that by excluding Pacific's retail costs from the price that it charges competitors for UNEs, we are ***not*** ruling that retail costs can never be recovered. The Cornell-Economides argument implicitly recognizes that to the extent an LEC continues to sell services to its end-users (i.e., business and residential customers), it is proper to include the LEC's reasonable retail costs in the price of such services. Although we cannot now predict with certainty what percentage of Pacific's future revenues will come from the sale of UNEs and what percentage will come from the sale of services, our expectation is that most of the future revenue will continue to come from services. Thus, the amount of retail costs that Pacific will be unable to recover by virtue of the TELRIC methodology is likely to be small.

C. The TSLRIC Studies Approved in D.96-08-021 Make the Detection Of Cross-Subsidization Difficult

One of the principal purposes of this proceeding has been to eliminate the dangers posed to local exchange competition by cross-subsidization. As the original Order Instituting Rulemaking, issued on April 7, 1993, stated:

> "There are two specific threats to competitive markets which dominant carrier participation pose, and which must be addressed if they are to continue a dual role as bottleneck holder and competitor. The first threat is the incentive and the potential ability that the dominant carriers have to manipulate the supply of bottleneck functions to impede competitors. The second is the ability of a regulated dominant carrier to cross subsidize its competitive offerings by increasing the price for its monopoly services. . . Unbundling and nondiscriminatory access will make it more difficult to engage in cross subsidy because the services used by the LEC's competitive providers will be available on a tariffed basis." (OIR/OII, p. 16.)

The objective of eliminating cross-subsidies among services is reflected in the Consensus Costing Principles adopted in D.95-12-016. CCP No. 3 states that "the increment being studied shall be the entire quantity of the service provided, not some small increase in demand." The commentary on this CCP concludes with the observation that "the parties agree that this costing principle would produce costs that are relevant for determining whether cross-subsidization exists." (D.95-12-016, App. C, p. 3.)

Unfortunately, cross-examination during the 1996 pricing hearings has raised serious doubt in our minds whether the TSLRIC studies adopted in D.96-08-021 are useful for detecting cross-subsidies. During his cross-examination by counsel for the California Cable Television Association (CCTA), Pacific's in-house costing expert, Richard Scholl, acknowledged that for many of the BNFs that were the subject of the hearings, reported "shared family" costs fell into several different families, of which there were 20. (R.T. 2140-2161; August 1, 1996). In one case, business access line service, six different families were involved. (**Id.** at 2154.). Mr. Scholl's cross-examination by counsel for AT&T demonstrated that it would be very difficult to determine from the TSLRIC studies whether the revenues from a particular family of services would be sufficient to cover the sum of the TSLRICs for those services. (R.T. 1813, 1817-25; July 30, 1996.)

As a result of this cross-examination, there is genuine reason to question how useful Pacific's TSLRIC costs are for determining the existence of cross-subsidies. Under TELRIC, on the other hand, the cost object is the network element itself rather than services made up of various network elements, so the possibilities for cross-subsidization should be considerably reduced.

III. SHOULD THE COMMISSION USE PACIFIC'S TELRIC STUDIES OR VERSION 2.2.2 OF THE HATFIELD MODEL FOR THE PURPOSE OF DETERMINING PACIFIC'S FORWARD-LOOKING COSTS?

As noted in Section I.A. of this decision, the December 18 ALJ Ruling concluded that the Hatfield Model should be evaluated along with Pacific's TELRIC studies. The December 18 Ruling stated:

> "[T]he best course of action is to litigate the propriety of the Hatfield Model in the next phase of this proceeding. This will be done by allowing AT&T, MCI and other interested parties to submit the Hatfield Model and costing results based thereon at the same time that the LECs submit their new cost studies. To the extent practicable, we will then evaluate the Hatfield Model and related cost results during the same period in which we are considering the comments on the additional cost studies that Pacific is being ordered to submit." (**Mimeo.** at 21-22.)

Pursuant to this directive, AT&T and MCI submitted documentation for Version 2.2.2 of the Hatfield Model on January 13, 1997, the same day on which Pacific submitted its TELRIC studies. Pacific and GTEC submitted extensive critiques of Version 2.2.2 with their March 18 opening comments, and AT&T and MCI submitted an extensive rebuttal defending the model in their April 15, 1997 reply comments.

As indicated by the discussion below, the submission of Version 2.2.2 raises a number of issues. These issues include whether we should evaluate that version of Hatfield or the later Version 3.0, whether the version we evaluate is sufficiently improved over the version that was considered in our Universal Service proceeding, and whether the criticisms made by Pacific and GTEC apply merely to the input assumptions that AT&T and MCI have used, or are directed at structural problems with the model.

A. Should The Commission Evaluate Version 2.2.2 Or Version 3.0 Of Hatfield?

Even before opening comments on Pacific's TELRIC studies and the Hatfield Model were submitted, a question arose whether the Commission should consider a later edition of the Hatfield Model, Version 3.0, which was released on February 7, 1997.

This question was extensively discussed at the PHC held on January 28, 1997, and in the March 4, 1997 ALJ Ruling issued as a result of that PHC. In that Ruling, the assigned ALJ concluded that because consideration of Version 3.0 was likely to disrupt the schedule for the proceeding, it should not be considered. In support of his determination, the ALJ noted statements by Pacific and GTEC that they would not only request additional discovery if Version 3.0 were considered, but were likely to demand hearings as well.[27] Second, and of equal importance, the ALJ noted that counsel for AT&T and MCI had stated at the PHC that they were willing to stand on Version 2.2.2. He quoted them on this point as follows:

> "MR. BOWEN [Counsel for MCI]: . . . I think both companies are happy to go forward with 2.2.2. And if version 3 becomes available in a timely fashion, and if your Honor or somebody else wants us to consider that as well, we can do that as well, but we don't want to slow down this process. We view 2.2.2 as being fully sufficient for the Commission for consideration as filed.
>
> "MR. HOULIHAN: Your Honor, for AT&T, I can confirm that that is our position. I might observe that to the extent that version [3.0] becomes available, it's simply a mechanism that interested parties can use as a test or check of the one that we have submitted, 2.2.2. But we are prepared to stand on what we have submitted." (March 4 ALJ Ruling, **mimeo.** at 13, *quoting* 1/28/97 PHC transcript.)

Even though all parties have made some references to Version 3.0 of Hatfield in their comments, we agree with the ALJ that Pacific's TELRIC studies should be evaluated against Version 2.2.2. First, the parties' comments about Version 3.0 suggest that the ALJ was right to be concerned that consideration of this new model would require time-consuming new discovery, and perhaps hearings. Second, as the March 4 ALJ Ruling points out, AT&T and MCI clearly agreed to stand on Version 2.2.2 against

[27] Counsel for Pacific contrasted this situation with Version 2.2.2. Since that version had been available for some months, Pacific felt comfortable having its validity determined through a comment procedure. (**Mimeo.** at 12-13.)

Pacific's January 13, 1997 cost studies.[28] Third, we note that computer models like Hatfield tend to be moving targets. In view of the ever-changing character of such models, we agree with the Colorado Public Utilities Commission that agencies like this one would have difficulty completing their proceedings if they were always under an obligation to consider the latest version of a model.[29]

B. Is Version 2.2.2 A Sufficient Improvement Over the Version of Hatfield Evaluated In Our Universal Service Decision, D.96-10-066?

This is not the first time this Commission has had occasion to consider the Hatfield Model. In our Universal Service decision, D.96-10-066, we evaluated an earlier version of Hatfield against a model sponsored by Pacific, the Cost Proxy Model (CPM), for the purpose of determining which model better estimated the costs of providing basic residential service on a statewide basis. The criteria for evaluating the models included (1) which model better estimated costs for the entire state, (2) which model more accurately reflected costs, (3) which model was more open and accessible to

---

[28] We note that in his June 18, 1997 Ruling on the validity of GTEC's workplan for conducting new cost studies, the ALJ ruled that these studies, which were submitted on September 15, 1997, would be evaluated against the then-most current version of Hatfield. (Administrative Law Judge's Ruling Concerning Workplan Of GTE California Incorporated For Preparing New Cost Studies, issued June 18, 1997, **mimeo.** at 6, fn. 9.) That version of the Hatfield Model is Version 4.0, which AT&T and MCI submitted on September 15, 1997.

[29] In a ruling earlier this year in its own telecommunications unbundling proceeding, the Colorado Public Utilities Commission denied a motion by AT&T to supplement its testimony. In doing so, the Colorado Commission said:

> "[W]e observe that cost models, in general, are merely tools in assisting the Commission in its ratemaking decisions. We have no reason to believe that our ability to decide issues in this case will be materially impaired by precluding evidence of the latest revisions to a cost model. These models, especially national ones such as AT&T's, are likely to be revised constantly and continually. The Commission cannot interrupt existing proceedings or begin rate proceedings anew each time a model is changed." (Docket No. 96S-331T; Decision No. 97-298; *Order: Granting Request for Reconsideration Of Interim Order, In Part; And Denying Motion to Supplement Direct Testimony*, adopted March 19, 1997, p. 5.)

changes in inputs and assumptions, and (4) which model's inputs and assumptions were easier to verify. (**Mimeo.** at 115.)

For a variety of reasons, we concluded that the CPM satisfied these tests better than Hatfield. First, the CPM could model costs on either a Census Block Group (CBG) or wire center basis, whereas the Hatfield Model could estimate costs only for much larger density zones. (**Mimeo.** at 116, 124.) Second, the CPM's grid cell design allowed customers to be placed within one-fourth of a mile, whereas Hatfield unrealistically assumed that population was uniformly distributed within CBGs, and that distribution plant alone covered the interiors of the CBGs. (**Id.** at 111, 116-117, 124.) Third, the CPM was found to be more open to changes in inputs and assumptions, which were based upon Pacific's actual data. Hatfield, by contrast, had many inputs that could not be changed, it reflected assumptions taken from other states, and it relied on conversations with unnamed experts to establish certain critical costs. (**Id.** at 119-20, 122-24.)

In today's decision, we are not comparing Version 2.2.2 of Hatfield against the CPM[30] or any other model, but against Pacific's actual cost studies. Nonetheless, we believe that the four tests posed in D.96-10-066 continue to be reasonable, and that we should not use Version 2.2.2 unless we can conclude that (1) AT&T and MCI have cured the Hatfield deficiencies identified in D.96-10-066, and (2) the results produced by the corrected version of Hatfield are superior to Pacific's own cost studies.

Our review of Version 2.2.2 discloses that while AT&T and MCI have had some success in curing the defects identified in D.96-10-066, enough defects remain so that it would be inappropriate to substitute Version 2.2.2 for Pacific's own cost studies in determining the forward-looking costs of Pacific's system.

Our review discloses that there are defects both in the ***structure*** of Version 2.2.2 and in the ***input assumptions*** that AT&T and MCI used to produce the outputs they

[30] Indeed, as explained in Section VI., the way in which the FCC has defined the loop requires Pacific to use a sample of its actual loop lengths rather than the CPM to estimate loop costs.

submitted on January 13. The structural defects -- which cannot be easily corrected -- include (1) how Version 2.2.2 estimates loop costs in low-density (i.e., rural) areas, (2) the failure of Version 2.2.2 to use network design assumptions that are consistent with its transmission parameters, (3) Version 2.2.2's reliance upon New Hampshire data to determine switch maintenance expense for California, (4) the lack of enough user-settable inputs in Version 2.2.2 to model depreciation properly, and (5) Version 2.2.2's unreasonable assumptions about how outside plant, such as telephone poles, will be shared with other utilities. The major erroneous input assumption – which can be corrected – was the investment per line that AT&T and MCI assumed to develop their estimate of switching investment costs. We consider each of these problems below.

C. Hatfield 2.2.2 Does Not Fairly Model Loop Costs In Low-Density Areas

As prior decisions in this docket have noted, loop costs comprise an important fraction of the total costs of a local exchange network. Not surprisingly, therefore, the parties have devoted a substantial amount of attention to whether Version 2.2.2 realistically models loop costs. Pacific's March 18 comments attack Version 2.2.2's treatment of loop costs in low-density areas, arguing that Hatfield results in overlong loop lengths in rural areas, and thus in an overstatement of loop costs there. AT&T and MCI defend Version 2.2.2's modeling of loop costs.

1. Pacific's Position

Like the early version of Hatfield considered in D.96-10-066, Version 2.2.2 relies upon CBGs to model loop costs in different geographic areas, and it assumes that homes are uniformly distributed within a CBG.

Pacific's opening comments strongly attack the plausibility of this assumption. One effect of the assumption is explained in an "engineering evaluation" of Hatfield 2.2.2 that was presented to the FCC in that agency's own universal service proceeding. The evaluation is attached as Appendix C-3 to the March 17, 1997 declaration of Pacific witness James Schaff.[31] The engineering evaluation states:

[31] Mr. Schaff's experience with loop engineering is described at pages 59-60 of D.96-08-021.

> "[Version 2.2.2] assumes a square CBG with a uniform distribution of households. The model attempts to lessen the impact of this unrealistic assumption by placing a Serving Area Interface (SAI) farther into the CBG than is customary, a distance equal to one quarter the length of one side of the CBG. However, this is equally unrealistic: the designed distribution cable lengths remain extremely long because the model assumes that each CBG contains only one SAI. In reality, design engineers may place many SAIs or cross-connects within large CBGs to reduce the high cost of distribution facilities. [Version 2.2.2] does not accommodate this problem . . ." (App. C-3 to 3/17 Schaff Declaration, p. 18.)

Mr. Schaff also argues that the distribution cabling assumed in Version 2.2.2 (which he refers to as HM2) is not sufficient to serve a low-density CBG if, as the model assumes, the population is evenly distributed within that CBG:

> "The total length of distribution cable placed by [Version 2.2.2] is insufficient to reach all subscribers. The HM2 assumes a square distribution area in its calculations, and serves it with a number of cables that are 5/8ths of the length of the side of the square. HM2 uses two distribution cables for rural exchanges whose density is less than 5 [households per square mile]. In the model calculations, this results in a very large area being served by 2 cables that only go 5/8ths of a side. It is not possible for 2 cables that are 5/8ths of a side to reach all households, assuming, as the HM2 does, that households are evenly dispersed within the CBG." (3/17 Schaff Declaration, para. 22, pp. 9-10.)[32]

2. AT&T's and MCI's Position

AT&T and MCI defend the reasonableness of their assumptions concerning low-density CBGs, and assert that Mr. Schaff has misrepresented Version 2.2.2 in this regard:

> "The documentation for Version 2 explicitly states that the Model assumes customers are clustered together, particularly in the lowest density areas, reducing the amount of distribution cable that would

[32] The author of the engineering evaluation quoted in the text, Dr. Robert Austin, makes the same point in his paper at page 29. Moreover, at pages 3-4 of its April 15 reply comments, TURN also notes that Version 2.2.2 appears to overstate loop costs in rural areas.

> otherwise be needed to serve all customers. This assumption of 'clustering' in less densely populated areas is intuitively plausible. . ." (AT&T/MCI 4/15 Reply Comments, p. 9.)

3. Discussion

Based on our own review of Version 2.2.2, we agree with Pacific that the model's assumptions about low-density areas are not realistic, and lead to greatly overstated loop costs. We estimate the effect of this overstatement at $150 to $170 million per year.

The problem lies in the two-step process by which Version 2.2.2 computes cable investments. The first step occurs in the "data module", which takes household counts from Census Bureau data and then computes the feeder and distribution cable lengths necessary to serve each CBG. The data module assumes that population is evenly distributed throughout the CGB.

The second step occurs in Version 2.2.2's "loop module", which estimates the cable investment necessary for each CBG based on the feeder and distribution lengths calculated in the data module. The loop module assumes that all distribution cables serving a CBG are of equal length (to reflect the assumption of uniform distribution around the SAI), but that the *number* of cables varies by density range (to account for clustering).

The net effect of this computational method is that Version 2.2.2 assumes fewer but longer cables in less dense areas to account for clustering. Even though the number of cables is fewer, they must be *extremely long* to account for the data module's assumption of uniform distribution. Under Version 2.2.2, the average per-unit loop cost for the lowest density zone is *nearly eight times* the per-unit loop cost for the lowest density zone reported by Pacific, a plainly unrealistic outcome.

D. Hatfield 2.2.2's Network Design Assumptions Are Not Consistent With Its Transmission Parameters

Another issue related to Version 2.2.2's treatment of low-density CBGs is whether it has realistically treated distribution plant beyond 18,000 feet. In his

March 18 declaration, Mr. Schaff notes that distribution distances exceeding 18,000 feet are common in Version 2.2.2, and he continues:

> "The HM2 designs a network to change from copper to fiber . . . beginning at 9000 feet of feeder length,[33] ignoring the length of distribution copper. This results in distribution lengths exceeding transmission quality parameters required for service. The network designed by HM2 will only talk [i.e., work] out to 18,000 feet on the distribution side of a Digital Loop Carrier. Beyond that, the network won't work, without additional provisioning. For example, coarser gauge copper cables, load coils, extended range plug-ins, and gain devices would be required beyond 18,000 feet, depending on the distance of the customer from the remote terminal. Mr. Riolo [the Hatfield engineer] and I substantially agreed on this." (3/17 Schaff declaration, p. 2, para. 6.)

The shortcomings identified by Mr. Schaff (which AT&T and MCI do not address in their reply comments) are similar to flaws we pointed out in the BCM, a predecessor of Hatfield. In D.96-10-066, we noted the following shortcoming of the BCM:

> "In rural areas where CBGs can be quite large, the BCM assumes that copper distribution plant can serve the entire interior. It is unclear whether the BCM allows for sufficient electronics in the distribution plant to ensure that these households could actually receive telephone service from the network as modelled." (**Mimeo.** at 117.)

E. Version 2.2.2 Understates Switch Maintenance Expense

1. Positions of the Parties

In addition to claiming that AT&T and MCI have assumed unrealistically-low switch investment per line (an issue we discuss below), Pacific argues that Version 2.2.2 also understates switch *maintenance* expenses. The reason for this problem, Pacific asserts, is that Version 2.2.2 uses a *factor* based on switch investment to calculate

---

[33] This assumption is inconsistent with the requirements of D.96-08-021. In that decision, we directed Pacific to revise its TSLRIC cost studies to assume that the "cross-over" point from copper to fiber occurred at 12,000 feet. (**Mimeo.** at 61.)

maintenance expense, and the factor is based on New Hampshire rather than California data. In his March 18 declaration, Mr. Scholl attacks the validity of this factor:

> "Using the New Hampshire factor nationwide is wrong. The Hatfield Model acknowledges that switching investment varies by switch size . . ., with the largest investment per line occurring for switches with the smaller line size. Since New Hampshire is characterized by small towns with small switches, the Hatfield Model would identify these switches as having higher switching investments per line than would be the case for states like California, with most lines in large switches in metropolitan areas. The New Hampshire factor is low not because maintenance expense is low, but because switch investment is high. By deriving the switch maintenance factor from New Hampshire's high switch unit investment, the Hatfield Model creates a factor only for 'small town' states like New Hampshire. This factor is clearly much too low for California, with its cities and lower switch unit investment." (3/18 Scholl Declaration, p. 3, para. 9.)[34]

AT&T and MCI argue in their April 15 reply comments that the problem of using "small state" data to derive a switch maintenance factor for California has been greatly exaggerated by Pacific. They argue that expense factors (which can be computed on a per-line basis or as a percentage of investment) are used throughout the local exchange industry, and that "where there was a concern about a particular ratio and better data were available in the public domain, the Hatfield Model developers relied on those data to estimate forward looking expenses." (AT&T/MCI Reply Comments, p. 20.) They specifically defend their use of New Hampshire data, noting that since there is evidence the use of small switches may actually tend to *increase* switch expense, their use of New Hampshire data for the switch maintenance factor may actually benefit Pacific. (**Id.** at 21.)

[34] GTEC makes a similar but broader criticism of Version 2.2.2 on pages 35-36 of its opening comments, asserting that "Hatfield designs a telephone system that could never be built and a cost structure that will never exist."

2. Discussion

We agree with Pacific that the use of New Hampshire data to estimate switch maintenance expense for California is unreasonable. Whether or not New Hampshire's use of smaller switches would tend to increase switch maintenance expense (an issue on which Mr. Scholl probably has the better of the argument), we think that a maintenance factor derived from investment – which is almost certain to be less precise than a maintenance estimate based on actual experience – should be based upon data for a state with demographic and topographic characteristics reasonably comparable to California's. New Hampshire's clearly are not.

F. Version 2.2.2 Does Not Model Depreciation In A Manner Consistent With D.96-08-021

In D.96-08-021, we approved the use of so-called "Duquesne" asset lives for Pacific and GTEC. (**Mimeo.** at 49-52, 72-75.) We deemed these asset lives, which are shorter than those we had previously approved, to be appropriate because they "look[] forward to an environment in which there is local exchange competition," rather than "the previous paradigm of the regulated monopoly environment." (**Id.** at 52.) The effect of adopting these shorter asset lives[35] was to allow more rapid depreciation of plant affected by competition and technological obsolescence.

1. Positions of the Parties

Pacific argues in its opening comments that the asset lives used in Version 2.2.2 are not consistent with those adopted in D.96-08-021. In his declaration, Dr. Francis Murphy notes that Version 2.2.2 assumes a single, 20-year life for both copper and fiber feeder, whereas D.96-08-021 clearly approved a 20-year life for fiber and a 14-year life for copper. (3/18 Murphy Declaration, pp. 15-16.) Dr. Murphy also contends that Version 2.2.2 does not identify the following types of plant by USOA account and use the depreciation rates adopted for these accounts in D.96-08-021:

[35] The accounts affected by the change are shown in the table on page 74 of D.96-08-021.

transport facilities, operator systems, public telephones, and general support. (**Id.** at 16.)

AT&T and MCI respond that while Version 2.2.2's *default* values for depreciation are not those adopted in D.96-08-021, they used the asset lives approved in D.96-08-021 in developing the Hatfield outputs they submitted on January 13. They argue that the ease with which they were able to vary the assumed asset lives is one of the strongest arguments for adopting Version 2.2.2:

> "[I]ts large number of user-settable inputs makes it simple for an analyst to compute new cost results using whatever assumptions are deemed most appropriate for a particular jurisdiction." (AT&T/MCI Reply Comments at 29.)

2. Discussion

Our own review of the input and output files that were submitted for Version 2.2.2 discloses that Pacific's criticisms have merit. AT&T and MCI used a single, 20-year life for both fiber and copper feeder, whereas D.96-08-021 clearly adopted a 20-year life for fiber and a 14-year life for copper.

Unfortunately, fixing Version 2.2.2's results to reflect the asset lives approved in D.96-08-021 is not simply a matter of changing the inputs. Contrary to the assertion of AT&T and MCI, Version 2.2.2's depreciation module does not have enough user-settable inputs to allow separate asset lives to be specified for copper and fiber.

The use of a 20-year asset life for both fiber and copper is a significant error; it understates Pacific's depreciation by about $100 million annually.[36]

Pacific is also correct that Version 2.2.2 does not use proper depreciation schedules for Operator Systems, Public Telephones and General Support. Once again,

[36] We acknowledge that the problem might have been addressed by using a blended depreciation schedule that reflected proper proportions of copper and fiber feeder. However, it appears that AT&T and MCI made no attempt to do this, and in any event, it would not solve the problem of inadequate user-inputs.

the problem appears to be that Version 2.2.2 does not have enough user-settable inputs to handle these depreciation categories by USOA account.

G. Hatfield 2.2.2's Treatment Of How Outside Plant Is Shared Is Not Reasonable

One of the more expensive items in the provisioning of loops is the cost of "outside plant," such as telephone poles and trenching. Outside plant costs can be reduced, however, if they are shared with other firms that use outside plant, such as cable companies and electric utilities. Version 2.2.2 of Hatfield seeks to minimize outside plant costs by assuming that the hypothetical carrier it models will share two-third's of all structure, in every density zone, 100% of the time.

1. Positions of the Parties

Pacific and GTEC both attack Version 2.2.2's assumption about the sharing of "outside plant" as unreasonable. In his declaration, Mr. Schaff states:

> "HM2's sharing assumptions are clearly unrealistic. One reason is that 100% of the time all of these companies will *not* be present on a pole. For instance, CATV is not common in rural areas and thus does not use poles in those areas . . . Where they are on the pole, CATV companies do not share an equal amount of the pole cost with power companies and ILECs. Instead, they lease space at low, politically-determined prices . . . It is also unreasonable to assume that 100% of the time, a standard 35 foot pole will have three utilities attached . . . Depending on the number of attachments of each utility, there is not enough space on the pole 100% of the time. For example, when power companies have transformers, primary power, and secondary power attachments, there is not room for a third utility." (3/17 Schaff Declaration at pp. 8-9, para. 20.)

In their reply comments, AT&T and MCI offer only a generalized defense of Version 2.2.2's assumptions about outside plant sharing:

> "[Pacific and GTEC] offer no documentary evidence to rebut the high frequency with which telephone and electric utility plant uses the same poles, or the proposition that, in a forward-looking environment, cable operators and other telecommunications providers will likely bear a greater share of cost responsibility for poles than they do today. Similarly, they fail to rebut the presumption that telephone companies typically share trenches for buried or underground facilities with other utilities . . . Thus, the Model's assumption that telephone utilities

should bear only 33% of the cost of shared structure is eminently reasonable." (AT&T/MCI Reply Comments, p. 11.)

2. Discussion

Our own review of Version 2.2.2 demonstrates that Pacific's criticisms have merit. The assumption of AT&T and MCI that poles will be shared equally with two other utilities, 100% of the time, is both contrary to experience and at variance with the plant sharing factors approved in D.96-08-021.[37] If we were to accept this assumption (which is reflected in many of Version 2.2.2's algorithms), Pacific's statewide average loop cost would be reduced by about $3.50 per month, which equates to a reduction in annual costs of more than $700 million.

We do not think it would be appropriate to accept an assumption with such a drastic impact merely because of assertions by AT&T and MCI that their outside plant-sharing assumptions are "reasonable" in a forward-looking environment. We will therefore adhere to the plant-sharing factors adopted in D.96-08-021.

H. AT&T and MCI Did Not Assume Reasonable Investment Per-Line When They Specified Their Input Assumptions For Version 2.2.2

Up to now, the shortcomings in Version 2.2.2 we have addressed have all been structural problems with the model. As noted in Section III.B., however, there was one input used by AT&T and MCI to generate the outputs submitted on January 13 that was hotly contested by Pacific and GTEC: *viz.*, the investment per-line that they assumed.[38]

As we shall see, the debate as to what amount of investment per line should be assumed is really a debate about what amount of total switching investment should be

[37] In the TSLRIC studies adopted in D.96-08-021, Pacific assumed that "aerial" plant (i.e., poles) are shared 50% of the time. It assumed that so-called "buried" and "underground" plant were not shared at all.

[38] Our own examination of Version 2.2.2 indicates that if one substitutes the investment-per-line that Pacific assumed for its own switch modeling, Version 2.2.2 will yield switch investment costs nearly identical to Pacific's.

assumed for a carrier like Pacific. For reasons discussed below, the parties have engaged in this debate not only with respect to the input assumptions that AT&T and MCI used to generate their January 13 Hatfield outputs, but also with respect to how Pacific modeled switching investment using the SCIS model, an issue we discuss separately.

1. The LECs' Position

Pacific and GTEC argue that the input assumptions AT&T and MCI used for investment per line (from which Hatfield Version 2.2.2 calculates total switching investment) are unrealistic for two complementary reasons. First, the LECs contend that with respect to switch prices being offered today, AT&T and MCI have failed to take account of the fact that different discounts apply depending on whether the switch is considered "new" or is intended to serve "growth" lines. Second, and more broadly, Pacific contends that the per-line inputs AT&T and MCI have used ignore the "life cycle" applicable to switch prices, which a long-run incremental cost study must capture.

One aspect of the LECs' position with respect to the switch prices offered today is summarized in the critique of Version 2.2.2 submitted by Drs. Timothy Tardiff and Gregory Duncan of National Economic Research Associates. In their critique, which is jointly sponsored by Pacific and GTEC,[39] Drs. Tardiff and Duncan state:

> "[T]he Hatfield Model ignores the fact that ILECs buy additional lines for installed switches as well as new lines for new switches. The additional lines for installed switches actually cost more, as the McGraw-Hill switch cost study used by the Hatfield Model describes . . .
>
> "The local switching component of the Hatfield Model illustrates the fallacy of its scorched view of cost studies. In order for the approach to produce realistic costs . . . a new entrant would have to serve customers

[39] The Tardiff-Duncan paper is attached as Appendix A to the March 18, 1997 opening comments of both Pacific and GTEC.

> with initial lines only and also have the volumes to command the discounts that existing ILECs apparently command. The fact that ILECs expand their switches as demand grows and the existence of a lucrative aftermarket [for additional lines]for this expansion demonstrate that the 'instant LECs' posited by the Hatfield Model are inconsistent with reality." (Tardiff & Duncan, ***Economic Evaluation of the Hatfield Model, Version 2.2, Release 2***, March 17, 1997, pp. 41-42.)

The "life cycle" argument is offered by Pacific. In his March 18 declaration, Mr. Scholl states that new technologies like digital switches typically go through a 5-stage life-cycle,[40] and he asserts that a proper long run incremental cost study "must reflect long run expected values. With switching equipment, or any other technology-dependent equipment, prices vary over the life of the technology, even when adjusted to eliminate the effects of inflation. By definition, a long run incremental analysis must capture the overall effect of all life cycle price variations . . ." (3/18 Scholl Declaration, p. 5, para. 13.)

Version 2.2.2 of Hatfield fails to capture these variations, Mr. Scholl continues, because it assumes that all switches can be purchased at the lowest price offered during the switch technology's life cycle. The effect of this erroneous assumption is to "grossly

---

[40] Mr. Scholl describes the five stages of the life-cycle for switch technology as follows:

> Stage A- The switch technology is brand new and the price is high, because initial vendors can charge a premium for its advanced capabilities.
>
> Stage B- Prices decrease as more vendors enter the market, but the switch price still reflects a premium due to the new technology's advanced features.
>
> Stage C- The new switch technology becomes standard, with vendors offering significant price discounts to replace a large number of older switches. However, these discounts apply only to switch replacements, and not to future growth additions.
>
> Stage D- As older switches are replaced, the switch replacement contracts expire, and switch prices rise to reflect the decreased level of purchases needed to meet growth demand.
>
> Stage E- A new switching technology appears, and the price of switches embodying the old technology rise as vendors exit the market for the old technology. (3/18 Scholl Declaration, pp. 5-6.)

understate capital costs and the operational expenses [Hatfield] derives by applying embedded cost factors to that investment." (**Id.** at para. 15.) Indeed, Mr. Scholl estimates that the Hatfield outputs assume only about half of Pacific's actual digital switching investment.

2. Position Of AT&T and MCI

The rebuttal to the complementary arguments put forth by Messrs. Tardiff, Duncan and Scholl appears in the April 14, 1997 declaration of Catherine Petzinger, an AT&T analyst who is an expert in the SCIS model. In addition to criticizing Mr. Scholl for not offering any empirical support for his five-stage life cycle, Ms. Petzinger asserts:

> "Mr. Scholl's oversimplified story omits many highly relevant attributes of the market for local switches, such as the accelerating pace of technical innovation (as can be seen by the shorter depreciation lives) and the impact of increasing competition. The end result will be that future purchases of replacement switches will be substantial, assuming depreciation lives of approximately 10 years, and this will continue to give large LECs tremendous volume purchasing power. In addition, the large number of expected switch replacements will continue to pressure the switching equipment vendors to negotiate highly competitive switching prices, which is presumably one reason why [the McGraw-Hill Northern Business Information study] is predicting that overall switch prices will continue to decline over the foreseeable future." (4/14 Petzinger Declaration, para. 282.)

3. Discussion

We agree with Pacific and GTEC that, when one takes actual experience into account, AT&T and MCI have not made reasonable assumptions about investment per line, which is what Version 2.2.2 uses to compute switching investment (and maintenance) costs.

First, our own review of the outputs shows that AT&T and MCI assumed that the most generous discount would apply to all switch purchases. As Mr. Scholl and Drs. Tardiff and Duncan state, this appears contrary to actual experience. Based on our own review of Pacific's switching contracts, the LEC witnesses are correct that the deepest discount applies only to switches that are considered "new", and does not apply to "growth" lines for existing switches.

The rebuttal to Mr. Scholl offered by Ms. Petzinger is based on speculation about the future, and is at odds with the Northern Business Information (NBI) study on which she purports to rely.[41] Drs. Tardiff and Duncan quote the following passage from the 1994 NBI study to support their point about the range of discounts:

> "The add-on market provides significant revenue potential for switch suppliers, particularly as the margins on new switches remain below the margins for the add-on market. A digital line shipped and in place will generate hundreds of dollars in add-on and hardware revenue during the life of the switch. Suppliers can afford to lose a few dollars on the initial (new) line sale in exchange for the increased revenue in the after-market, where prices are less likely to be set by competitive bidding." (1994 NBI Study, p. 71, *quoted in* Tardiff & Duncan, pp. 41-42.)

Based on the realities of the switch market, we see no reason to depart from the conclusion we reached on the life-cycle issue in D.96-10-066. In that case, we accepted Pacific's life-cycle approach to switching costs, observing that "the prices for new switches are not discounted significantly until the new technology becomes standard, and a large number of older technology switches are replaced." (**Mimeo.** at 146-47.) Accordingly, we agree with Pacific that the Hatfield inputs must be modified to reflect a proper life cycle approach.

I. The Infirmities Of Hatfield 2.2.2 Require That UNE Costs Be Set Using Pacific's TELRIC Studies, After Appropriate Adjustments Are Made

For all of the reasons set forth above, we conclude that Version 2.2.2 of the Hatfield Model should not be used to estimate the forward-looking costs of Pacific's system. Version 2.2.2 continues to suffer from many of the same infirmities that we identified in D.96-10-066, and it has other problems that limit its ability to model costing issues we decided in D.96-08-021 and are not reconsidering here, such as the appropriate depreciation rates and cost of capital.

[41] Northern Business Information, *US Central Office Equipment Market—1995,* McGraw-Hill.

However, we also note that Version 2.2.2 has now been superseded by newer versions of Hatfield, namely Versions 3.0, 3.1 and 4.0. In his June 18, 1997 Ruling concerning GTEC's workplan for submitting new cost studies, the assigned ALJ determined that those new cost studies should be evaluated against the version of Hatfield that AT&T and MCI designated. They have designated Version 4.0, which was submitted on September 15, 1997. We expect to undertake an evaluation of Version 4.0 comparable in detail to our examination herein of Version 2.2.2, and we hope that the structural and input problems identified above will be remedied in the new version.[42]

As a result of the shortcomings in Version 2.2.2, we will use the TELRIC studies submitted by Pacific on January 13, 1997 (and subsequently amended on February 7) as the basis for determining the costs on which Pacific's UNE prices will be set. In their opening and reply comments, the parties have devoted many hundreds of pages to critiquing Pacific's studies. It is to these criticisms that we now turn.

IV. HAS PACIFIC CORRECTLY CALCULATED ITS SWITCHING INVESTMENT UNDER THE TELRIC METHODOLOGY?

As was the case with the TSLRIC studies we considered in D.96-08-021, the parties have offered so many detailed criticisms of Pacific's TELRIC studies that it would not be possible to consider each of them and still produce a decision of manageable length within a reasonable period of time.[43] Therefore, as in D.96-08-021,

---

[42] In light of the decision by AT&T and MCI to submit Version 4.0 of Hatfield for comparison against GTEC's September 1997 cost studies – and the extensive discovery that has occurred regarding this new version - it is difficult to take seriously the claim by AT&T and MCI that the ALJ's DD accords "discriminatory treatment" to Version 2.2.2 relative to Pacific's cost studies. (1/16/98 AT&T-MCI Joint Opening Comments, p. 26.) As noted in sections III.B. and III.G.2. of this decision, most of the flaws that have lead us to reject Version 2.2.2 are structural – i.e., deeply rooted in the model's algorithms – and thus are not easily cured. In contrast, the adjustments that we are ordering Pacific to make to its TELRIC studies will be due 15 days after the effective date of this decision and can be handled through an advice letter process.

[43] To those who criticize this approach, we repeat what we said about the cost study process in D.97-03-021, our recent order regarding Pacific's application to increase ISDN rates:

Footnote continued on next page

we have decided to discuss those issues with the most significant impact on the overall validity of the studies, because the resolution of those issues is likely to have the most substantial effect on the UNE prices that we will soon be setting for Pacific.

From the parties' comments, it is evident that the issue with the largest single dollar impact is the treatment of switching costs. As explained below, AT&T and MCI argue that several of Pacific's switch investment modeling assumptions (including the "life cycle" argument discussed in Section III.H) have the effect of overstating Pacific's switch costs by about $800 million. While Pacific concedes that it made some errors in calculating switching costs, it estimates that these errors are much less.

A. Background Concerning Use of the SCIS Model

There are two reasons why the parties have devoted so much more attention to the treatment of switching costs in Pacific's TELRIC studies than they did to how switching was handled in Pacific's TSLRIC studies. First, the FCC's definition of the switching UNE is broader than the definition of switching that governed our 1996 hearings, and includes functionalities that were covered by other BNFs during the 1996 hearings.[44] Second, and of greater importance, the parties had access this year to SCIS, the basic model used throughout the telecommunications industry to estimate switching investment costs.

The SCIS Model was not available to the parties in 1996 because the assigned ALJs had concluded in their November 16, 1995 Ruling that unfettered access to the

---

> "The record in this proceeding and the comments . . . on the ALJ's proposed decision confirm our view that the development of product costs is a highly subjective one. Although we may develop logical and intuitively sound costing principles, we cannot specify every element of a cost study without engaging in a process of regulatory detail that is out of proportion. Even if we were able to comb through every line item in a cost study and reach an informed judgment on each, as the parties seem to propose, the result would not justify the effort because the cost study would not precisely track future costs." (**Mimeo.** at 21.)

[44] For example, the FCC's definition of switching includes vertical features such as call waiting and call forwarding.

SCIS model would contravene the terms of several FCC decisions. As the ALJs noted, the FCC had concluded that the switch vendor price information needed to run SCIS was so competitively-sensitive that only the FCC staff and an independent "auditor" should have access to it. Rather than letting other parties critique the SCIS Model, the FCC directed its staff and the auditor to conduct their own independent verification of the model. Parties who signed nondisclosure agreements were entitled to receive modified SCIS software, but the displays produced by this software were heavily-redacted, with no switch prices, switch components or processing times shown. (November 16, 1995 ALJs' Ruling, **mimeo.** at 5-6.)

The November 16, 1995 ALJs' Ruling left no doubt that this Commission would honor the restrictions placed on SCIS access by the FCC. After noting that members of the California Telecommunications Coalition were requesting only that Pacific and GTEC perform SCIS runs with alternative assumptions, the Ruling concluded:

> "Thus, it appears that the Coalition's members are not trying to use this proceeding as an end-run around the [FCC] order discussed in the text. We would not tolerate such an end-run, and have ample authority . . . to prevent one." (**Id.** at 6, n. 5; citations omitted.)

During late 1996 and early 1997, access to the SCIS model was sought during the discovery process in several states where arbitrations were being conducted pursuant to § 252 of TA 96. A few state public service commissions ruled that access to SCIS should be granted on terms considerably more lenient than those imposed by the FCC. These state commission rulings caused both the LECs and the switch vendors to reevaluate the terms on which they would be willing to make unredacted versions of SCIS available. The result of this reevaluation process was an agreement for the protection of third-party confidential (i.e., switch vendor) information. When this agreement was presented in early 1997 to the assigned ALJ, he directed Pacific to make

complete versions of the SCIS model (fully populated with input data) available to AT&T and MCI.[45]

A. The Parties' Contentions Concerning Pacific's Alleged Overstatement Of Switching Costs

In their March 18, 1997 Opening Comments, AT&T and MCI claim that the access they have been granted to the SCIS model has "ushered in a revolution that undermines the very foundation of Pacific's *ancien regime*," because "the detailed, complex (and heretofore unexamined) Bellcore switching investment model on which Pacific has relied actually turns out to be less representative of the way in which Pacific actually incurs costs for switches than the simple, straightforward, public Hatfield Model." (AT&T/MCI 3/18 Opening Comments, pp. 2-3.)

To support these claims, AT&T and MCI rely principally upon the declaration of Ms. Petzinger. Her explanation of how SCIS calculates switching investment makes clear that it is similar to Hatfield's switching module, and that the net prices assumed for switches are critical:

> "The SCIS model contains vendor 'list' prices and requires the user to enter a discount to customize the switching investments to reflect the actual prices paid by the local telephone company . . . The discount factors used for each switch type are of central importance in the evaluation of any SCIS study because these discounts have a linear relationship to SCIS outputs; i.e., SCIS will generate twice the investments for each element when a user enters a zero input discount compared to a study with a user input of fifty percent. Therefore, if the discount factors used as SCIS inputs are not carefully developed so that they closely replicate the actual price in Pacific's contracts, the results produced by SCIS will misstate Pacific's switching investments." (3/17/97 Petzinger Declaration, Para. 16.)

Ms. Petzinger concludes that the discounts assumed by Pacific do not replicate the actual prices it can expect to pay for switches. As stated in the Hatfield critique of

[45] February 24, 1997 ALJ Ruling, **mimeo.** at 6-7. As noted in Section I.A., the form of third-party nondisclosure agreement approved by the ALJ is attached to the February 24, 1997 Ruling as Appendix A.

Drs. Tardiff and Duncan quoted in Section III.H, Pacific's switching contracts provide for different discounts depending on whether the switch being purchased is to replace an existing switch or to serve additional "growth lines" on an already-installed switch. Ms. Petzinger argues that Pacific has unreasonably assumed that most of its switch purchases will be to serve growth lines:

> "The actual number of new switches and growth lines is the basis on which Pacific and its vendors reached agreement on both the new and growth line prices reflected in the contracts. Pacific's calculations, using the embedded base of lines, would imply that [about 60%] of all purchased lines would be priced at the higher, growth price. In actuality, Pacific's documentation estimates that, over the life of its current contracts, [about 90%] of the lines will be purchased at the lower, new switch price! The discount percentage input should reflect the mix of new switch and growth lines that Pacific actually plans and has committed to purchase." (**Id.** Para. 19.)

In addition to attacking Pacific's assumptions about the percentage of growth lines, Ms. Petzinger argues that Pacific has assumed an unreasonable switch mix. She notes that Pacific's SCIS runs assumed the use of medium and large switches, whereas Pacific's actual system has a large number of small switches. Since small switches have fixed "getting started" costs similar to large switches, their use increases the total price per line, and requires a higher discount to achieve Pacific's targeted average price per line. In short, Ms. Petzinger contends, by assuming only medium-to-large switches, Pacific underestimated the average discount it can expect to receive. (**Id.** at 20.)

B. Pacific's Position

In his April 15 reply declaration, Mr. Scholl defends Pacific's SCIS modeling with a restatement of the life cycle approach to switching costs described in Section III.H:

> "The costs in a long run analysis must address the costs expected for *all* switches purchased over the life-cycle of the technology, not just those to be purchased in the lowest-priced period of the life-cycle. Some switches, which will be purchased early in a new switch technology life cycle, prior to switch vendors offering their deep discounts for replacement switches, will necessarily be purchased with smaller discounts than either the

> replacement switch discount or the growth line discount present during the later period of the switch technology life cycle. By using the late period growth line discount for the price for these early period switches (i.e., those described by Ms. Petzinger as 'embedded'), Pacific [actually] *understated* its forward looking switching costs; precisely the opposite of the 'gross overstatement' claimed by Ms. Petzinger. (4/15 Scholl Declaration, pp. 37-38.)

Although Mr. Scholl is critical of Ms. Petzinger's arguments concerning switch discounts, he concedes that there is merit in some of her other criticisms of Pacific's SCIS runs. He acknowledges, for example, that Pacific incorrectly included switch processing investments in its determination of set-up investments. The result of this, along with "other errors", results in overstatement of "average end office setup costs" of about 5%. (**Id.** at 35.) He also acknowledges that some of the other technical corrections set forth in Attachment B to Ms. Petzinger's declaration are correct, but he asserts that the results of these changes are modest. (**Id.** at 12-13.)

C. Discussion

Based on the record before us (including the extensive discussion of switching investment set forth in the comments on the DD), we do not believe that AT&T and MCI have demonstrated that Pacific's SCIS runs significantly overstate its switching investment costs. As stated in Section III.H. above, we agree with Mr. Scholl that the switch discounts assumed in SCIS, Hatfield or any other model should reflect the prices that Pacific can actually expect to pay over the entire life-cycle of digital switching technology. The modeling reflected in Pacific's January 13, 1997 TELRIC studies – while not without errors that must be corrected[46] – comes much closer to meeting this objective than the approach advocated by AT&T and MCI.

---

[46] At pages 12-13 and 35 of his April 15, 1997 reply declaration, Mr. Scholl conceded that several of the SCIS modeling errors pointed out by Ms. Petzinger in her March 17, 1997 declaration were correct, but he did not quantify them. In its January 26, 1998 comments on the DD, Pacific states that unless instructed otherwise, it "intends to correct all of the errors it acknowledged in its Opening and Reply Comments on the TELRIC studies."

Footnote continued on next page

After Pacific submitted its TELRIC studies, the parties had an opportunity to engage in extensive discovery concerning the new cost studies. One aspect of that discovery was a four-day deposition devoted exclusively to how Pacific conducted its SCIS modeling. Although many issues were explored during this deposition (the entire transcript of which was lodged along with the AT&T/MCI opening comments[47]), our own review of the transcript indicates that Pacific made only one SCIS modeling error in addition to those that Mr. Scholl acknowledged in his April 15 reply declaration.[48]

With respect to the switch modeling errors acknowledged by Mr. Scholl, as well as those acknowledged by Brian Delidow at pages 2-4 of his April 15, 1997 declaration on behalf of Pacific, the corrections should be made in the G.O. 96-A advice letter that we are requiring Pacific to file after the effective date of this decision. In that advice letter, Pacific should quantify each of the modeling errors set forth in Attachment B to Ms. Petzinger's March 17 declaration that Pacific acknowledges should be made. The advice letter should also correct all other errors Pacific has acknowledged with respect to its TELRIC studies.

[47] On March 18, 1997, AT&T and MCI filed motions along with their opening comments seeking to have the entire transcripts of the SCIS and other depositions included in the record, and to file the exhibits to the SCIS depositions under seal. These motions are unopposed by Pacific.

Although the depositions provide useful context, we are unwilling to include them in the record in their entirety. Under Rule 69(a) of our Rules of Practice and Procedure, the ALJ has discretion to admit only those portions that contain "relevant and material matter". The pages that we consider relevant and material from the SCIS deposition, as well as the "panel" deposition of Mr. Scholl and Mr. Pearsons that took place from February 19 to February 21, 1997, are cited in Appendix B to this decision. We will admit these pages from the depositions into the record, as well as Exhibits 4, 5, 7, 10, and 12 to the SCIS deposition. These exhibits, which contain highly sensitive and proprietary information about switching costs, shall be filed under seal.

[48] At the SCIS deposition, Pacific's witness acknowledged that while Pacific had taken a "rolling average" of the switch prices specified for 1993-97 in its contract with Northern Telecom (which manufactures the DMS switch), its average for the 5-ESS switch (which is manufactured by Lucent Technologies) only covered the 1993-96 period. Further, the witness acknowledged that Pacific's modeling failed to account for the fact that the Lucent contract provided for a deeper discount on add-on lines during the period 1997-2002 if Pacific purchased certain numbers of new switches in the 1993-97 period, as it did. We calculate the combined effect of these modeling errors at $30 million. (SCIS deposition, February 14, 1997, Tr. 467-469.)

Footnote continued on next page

While we will order Pacific to correct all of these errors in its G.O. 96-A filing, further adjustments to Pacific's computation of switching investment are not justified.

AT&T and MCI have devoted nearly 11 pages of their January 16, 1998 opening comments on the DD to a detailed attack regarding the DD's conclusions on switching investment, which were the same as those set forth above. Because the criticism of AT&T and MCI is so extensive, we consider it necessary to discuss these contentions – and Pacific's rebuttal – in detail.

First, AT&T and MCI strenuously argue that in considering Pacific's treatment of switching investment, it was improper for the DD to consult the 1990-1999 average investment per line shown in the 1995 NBI study.[49] AT&T and MCI argue that "by relying on this extra-record evidence, the [DD] commits legal error. The Commission must render its decision based on the evidence in the record. It may not look to, or rely upon, any extra-record materials." (1/16/96 AT&T-MCI Comments, p. 13, n. 21.)

This argument is not only without merit, but reflects a serious misunderstanding of the administrative process. First, the costing phase of this proceeding has been treated as a rulemaking, and it is well-settled that in a rulemaking, an expert agency may rely upon relevant new documentation that it collects during the comment period.

In its January 16, 1998 comments on the DD, Pacific asserts that we have erred in this calculation. Pacific agrees that while we used the correct "add-on" price for lines purchased in 1993 and later, it is incorrect to use this price for lines purchased prior to 1993, because this add-on price was unavailable prior to the signing of the Lucent contract. (1/16/98 Pacific Comments, pp. 2-4.) For the years prior to 1993, Pacific urges us to use "a surrogate equal to the Lucent contract add-on line price for the first year of the contract (1993)." (**Id.** at 2.)

We decline to make this adjustment, because the 1993 add-on price is not set forth in the Lucent contract. Thus, it is not part of the record before us.

[49] In fact, the average investment per-line that we are approving herein is somewhat higher than the average shown in the 1995 NBI study for what the RBOCs as a group are expected to pay during the 1990-1999 period. However, given the large number of variables involved in a modeling exercise as complex as calculating switching investment – including differences in labor rates, traffic density, deployment timing and building costs -- such differences are to be expected, and they certainly cannot be considered as invalidating the results of Pacific's studies.

Footnote continued on next page

(*Rybachek v. U.S. E.P.A.*, 904 F.2d 1276, 1286 (9th Cir. 1990), *citing BASF Wyandotte Corp. v. Costle,* 598 F.2d 637, 644-45 (1st Cir. 1979).)[50] Second, while a complete copy of the 1995 NBI study was not included with any party's comments, at least two of the AT&T/MCI witnesses -- Catherine Petzinger and Robert Mercer -- cited it in their declarations.[51] When their own witnesses put the NBI study at issue, AT&T and MCI are hardly in a position to object if the Commission chooses to consult it, especially for the industry-wide data that was cited in the DD.

Turning to the substance of AT&T-MCI's comments, the issue for which they most heavily criticize the DD is its approval of Pacific's assumptions about the relative percentages of "new" or "replacement" lines versus "growth" or "add-on" lines. As noted above, much deeper discounts are given for "new" lines than for "growth" lines. AT&T and MCI contend that the proper mix is to assume 90% new and 10% growth lines, while Pacific argues that the proper mix is 40% new and 60% growth.

---

[50] Even in the context of adjudication, an agency may take official notice of materials that summarize industry trends, such as the NBI study, because "facts that concern scientific truths, sociological data, *and industry-wide practices* . . . are not peculiarly within the knowledge of the parties and are not of the type that generally would be aided by viewing the demeanor of witnesses, by cross-examination, and other aspects of adversarial development . . ." (*Broz v. Schweiker,* 677 F.2d 1351, 1358 (11th Cir. 1982), emphasis supplied; II Davis & Pierce, ***Administrative Law Treatise, 3d. Ed.*** § 10.6, pp. 151-165.)

[51] *See* 4/14/97 Reply Declaration of Catherine Petzinger, paras. 280, 282; 4/14/97 Reply Declaration of Robert Mercer, p. 20, para. 147.

By means of a hypothetical example set forth in the footnote below,[52] AT&T and MCI argue that Pacific's ratio of new-to-growth lines is unrealistic, and assumes rates of growth that will not be realized in the real world:

> "Given the contract definitions of the applicability of the replacement and growth line prices, it is easy to see that Pacific would have to purchase an incredibly large number of lines in the later years of a switch's economic life to achieve an approximately 60% weighting of the growth line price. In fact, it would require approximately a 20% per year line growth, compounded annually, to achieve a 60% weighting of growth lines if the initial switch purchase were sized exactly to meet initial demand (with no growth spare) and Pacific made annual purchases under its switching contracts that were exactly sufficient to meet annual line growth." (1/16/98 AT&T/MCI Joint Opening Comments, p. 9.)

Such an assumption is unrealistic, AT&T and MCI continue, because "the weighting of growth line prices on which Pacific and the [DD] rely is simply not

---

[52] GROWTH NEEDED TO ACHIEVE 60% WEIGHTING

Year	Annual Growth Rate	Lines Bought at "New" Price	Lines Bought at "Growth" Price	Total Lines at End of Year
0		10,000		10,000
1	20%	2,000		12,000
2	20%	2,400		14,400
3	20%	2,880		17,280
4	20%	3,456		20,736
5	20%	4,147		24,883
6	20%		4,977	29,860
7	20%		5,972	35,832
8	20%		7,166	42,998
9	20%		8,600	51,598
10	20%		10,320	61,917
		24,883	37,034	
	Growth Lines as % of Total			60%

achievable within the adopted ten-year depreciation life [set forth on page 74 of D.96-08-021] under any plausible growth conditions." (**Id.** at 11.)

Pacific's response is that the unrealistic thing here is the hypothetical example offered by AT&T and MCI. With regard to the table set forth in footnote 52, Pacific argues:

> "In essence, [AT&T and MCI] propose a 'turn-back-the-clock' approach which assumes that it is 1993, that the switch vendor contracts have just become effective, and that there are millions of old analog ESS lines that will be replaced with digital switches. By turning back the clock and only analyzing a period of time when the vendor contracts apply, [AT&T and MCI] calculate that 90% of the lines placed are priced as new or replacement lines subject to the steepest discounts. AT&T/MCI offer no justification why 1993 is the appropriate starting point for their analysis." (1/26/98 Pacific Reply Comments, p. 4; footnotes omitted.)

In fact, Pacific continues, 1993 is clearly the ***wrong*** year for the beginning of a proper life-cycle analysis, because the replacement of analog with digital switches began in the early-to-mid 1980s. Further, Pacific argues, AT&T and MCI's "analysis assumes a large placement of lines in the first year and normal growth in subsequent years. That is not reasonable. Large placements of lines replacing obsolete [analog] technology occur over the life of the five year contract, not all in the first year . . . " (**Id.** at 5.)

Pacific also takes issue with the contention that its assumed ratio of new-versus-growth lines is inconsistent with the 10-year asset life applicable to digital switches. Pacific states:

> "[T]he ten years used in [AT&T/MCI's] table is not consistent with a ten year depreciation life. A ten year depreciation life means the average age of all investment is ten years. The average age for all lines in the analysis is much less than ten years. Also, the analysis confuses the factors that drive a ten year depreciation life. The depreciation life will reflect many intermediate replacements of component parts of the switch that occur throughout the period from when the switch is first installed to its final replacement. Quite simply, the analysis needs to be extended for many more years. For example, digital switch line placements have occurred since the early 1980s[,] and there is no sign of a replacement switch technology occurring anytime in the next 5 to 10 years . . . Thus, the

> analysis in [AT&T/MCI's] table needs to examine a period of about twenty-five years [i.e., 1980 to 2005], not just 10 years." (**Id.** at 4-5; footnote omitted.)

After carefully considering the parties' comments on the DD, we continue to think that Pacific has the better of the argument. Pacific is correct that the AT&T/MCI table implicitly assumes a start date such that virtually all switches will be replaced at the deepest discount, whereas a proper life-cycle analysis should cover an extended period of time. We also agree with Pacific that AT&T/MCI's analysis is inconsistent with how depreciation rules work in the real world. A digital switch is not, as AT&T and MCI suggest, a piece of hardware that is fully depreciated within 10 years; it is a combination of hardware and software (including many upgrades) that demands continued investment over a period of at least 15 years. If we were to adopt AT&T/MCI's position, we would be holding, in effect, that a significant component of switching costs do not exist in a forward-looking environment. The corollary of this view is that Pacific should have to bear the entire cost of capacity added to serve customer growth, *including* growth attributable to UNE purchases by CLCs. Such a result would be manifestly unfair.

V. HAS PACIFIC APPROPRIATELY REASSIGNED SHARED AND COMMON COSTS IN ITS NEW COST STUDIES TO CONFORM WITH TELRIC PRINCIPLES?

As stated in the December 18, 1996 ALJ Ruling, one of the principal differences between the TSLRIC and TELRIC costing methodologies is that the latter should result in a smaller "pot" of unassigned shared and common costs. This follows from two aspects of the TELRIC methodology: (1) it requires that "shared family" and "shared common" costs be assigned as much as possible to the UNEs that are the "cost objects" of a TELRIC study, and (2) it requires that costs associated with the provision of retail service be excluded from the price of a UNE. (December 18 ALJ Ruling, p. 8.) The December 18 Ruling directed Pacific to file TELRIC studies partly in the hope that a reduction in the size of the shared and common cost "pot" would make the pricing hearings for UNEs less contentious. (**Id.** at 10.)

The total of unassigned shared and common costs in the TELRIC studies that Pacific submitted on January 13, 1997 is approximately $1.2 billion, considerably less than the $2.2 billion in such costs that were reported in the TSLRIC studies adjudicated in D.96-08-021. Approximately $500 million of the reduction is attributable to the assignment of shared family expenses directly to UNEs; the other $500 million is attributable to the removal of $500 million in shared family expenses classified as retail.

Despite the substantial reduction in shared and common costs reflected in the January 13 cost studies, several parties have argued that Pacific's "billion dollar bucket" is still too high, and that it is inconsistent with TELRIC principles.

In their March 18 opening comments, for example, AT&T and MCI argue that the amount of shared and common costs that Pacific cannot logically assign to UNEs does not exceed $600 million. AT&T/MCI's criticisms of Pacific's treatment of shared and common costs fall into three main categories. First, they contend that a substantial portion of the $1.2 billion in shared and common costs that Pacific has reported are, in fact, volume-sensitive, and should therefore be assigned to specific network elements. Second, they argue (along with other parties) that Pacific has assigned an excessive amount of shared and common costs to the switching call set-up function and the entrance facilities network function. Third, they contend that a large amount of the costs identified by Pacific as shared and common are, in fact, related to the provision of retail service, and so must be excluded under TELRIC principles.

We consider these arguments in the discussion below. We conclude that the first two criticisms are largely without merit, but agree that Pacific should exclude about $68 million in retail costs from the "shared common" category. We will also require Pacific to provide further justification--through the same advice letter process used following D.96-08-021--for its treatment of about $100 million in shared and common expenses.

A. Has Pacific Treated As Shared and Common, Costs That Are, In Fact, Volume-Sensitive, And Thus Properly Assignable To Individual Network Elements?

1. Position of AT&T and MCI

In their March 18 Opening Comments, AT&T and MCI attack the level of common costs that Pacific has reported as inconsistent with TELRIC (and general

economic) principles. True common costs, they assert, must remain fixed without regard to the firm's output. However, they continue, the nearly $ 1 billion in common costs Pacific has reported are clearly related to the firm's size, and thus should be considered volume-sensitive. AT&T and MCI conclude that under both the Consensus Costing Principles (CCPs) adopted in D.95-12-016 and the FCC's explanation of TELRIC, volume-sensitive expenses are supposed to be capable of assignment to individual network elements.

AT&T and MCI rely on two evidentiary prongs for their argument that Pacific has not assigned enough shared and common costs to individual network elements. The first is a discussion set forth at pages 12-22 of the March 18 declaration of Drs. Lee Selwyn and Scott Lundquist. It describes various categories of shared and common costs that Drs. Selwyn and Lundquist contend can be assigned to UNEs on the basis of "headcount loadings", i.e., the number of employees within the company affected by the expense category. The categories include medical service expenses, general security expenses and legal expenses. Drs. Selwyn and Lundquist contend that the total amount of shared and common costs that can be assigned in this way is $218 million.

The second evidentiary prong is a series of regression analyses set forth in the March 18 declaration of Drs. Patricia Kravtin and Sonia Jorge. The import of these highly technical analyses is summarized by Drs. Selwyn and Lundquist as follows:

> "The econometric analyses of overhead expenses that are presented in the Kravtin/Jorge declaration demonstrate that ILEC 'common overhead' cost levels vary directly *and proportionately* with output and firm size . . . [T]he regressions tested for a relationship between various types of 'overhead' costs, including the specific accounts for which Pacific claims significant levels of common costs, and two measures of firm size and output, namely, operating revenues and direct expenses. In all cases, the regression models produced very strong statistical correlations between overhead costs and each of the measures of output or firm size . . . In addition, the constant terms (intercept) for the regression models, which indicates the level of truly fixed overhead costs (i.e., those that would remain as the firm's output level or size approached zero), demonstrates that ILECs incur very little or no fixed overhead costs . . . These results confirm and strengthen the strong statistical correlations between overhead costs and output that

> [we] had previously presented in this proceeding . . ." (3/18 Selwyn-Lundquist Declaration, para. 27.)

2. Pacific's Position

In his April 15 declaration, Pacific witness Bruce Egan contends that the AT&T/MCI witnesses have wrongly equated *volume-sensitive* costs with *variable* costs, and that Pacific's treatment of common costs is correct under the CCPs adopted in D.95-12-016:

> "The popular lesson in basic economic textbooks is that 'in the long run all costs are variable', including common costs. I too accept this standard economic doctrine because in the long run a firm is allowed to exit the market entirely. However, this does not mean that all costs are *volume sensitive* in the long run. Indeed, a very simple example proves this point: an annual license fee to operate a business, including all of the costs of obtaining it, is never volume sensitive, but it will no longer exist if the firm exits the market. Thus[,] such costs may be variable in the long run (if the firm decides to exit the market), but they are not volume sensitive. This is the reason why [CCP] No. 1 avoids the term 'variable' and instead holds that '[l]ong run implies a period of time long enough that all costs are *avoidable*.' (Emphasis added)." (4/15 Egan Declaration, p. 2.)

Mr. Egan also disputes the statistical validity of the regression analyses presented by Drs. Kravtin and Jorge. He argues that these analyses prove too much:

> "In various recent regulatory proceedings, the CPUC has seen many regression models utilizing different variables, each with relatively high measures of correlation (e.g., revenues, access lines, total operating expenses) . . . Invariably, the models show a high correlation between overhead costs and whatever explanatory variable is used . . . If the CPUC accepted all these different models, then Pacific's overhead costs could be 'explained' many times over, and the total overhead costs would be allocated many times over as well. For example, suppose there are 10 regression equations, each with a separate explanatory variable, and that each of the 10 regression equations suggest that 80% of common costs should be allocated. In such a case, the regressions would suggest that a total of 800% . . . of common costs should be allocated. Obviously, this is illogical. The solution to this logical dilemma is not to choose between competing regressions, but rather to recognize that none of the various regression models support

> attribution of costs to specific services or network elements." (**Id.** at 11.)

Mr. Scholl attacks the use of regression analyses for a different reason. He points out that this Commission rejected them as the basis for developing an "overhead loading factor" in D.96-08-021:

> "[W]e litigated the usefulness of regression analyses with respect to assigning common costs in the TSLRIC proceeding. They don't establish the 'cost-causation' required by the CCPs to attribute costs to specific services or elements . . . The regressions are a little more extensive this time but the basic analysis is still unpersuasive . . . The cost causation test in [CCP No. 5 and the definition of "common cost"] defines whether or not a cost is 'common'. The common costs in Pacific's TSLRIC and TELRIC analyses are determined by this test through detailed analysis of the activities which cause the costs." (4/15 Scholl Declaration, pp. 10-11.)

3. Discussion

In this rather esoteric debate about costing principles and how they should be applied in a real-world cost study, we believe that Pacific clearly has the better of the debate. As Messrs. Egan and Scholl point out, AT&T and MCI appear to be confusing *volume-sensitive* costs--which can be assigned to particular elements--with *variable* costs, which cannot necessarily be attributed in the same way. Moreover, Messrs. Scholl and Egan are correct that this Commission has previously rejected the use of regression analyses to develop an "overhead loading factor" for assigning common costs.

Before dealing with these issues, however, a few observations must be made about the expense categories that Drs. Selwyn and Lundquist contend can be assigned on the basis of headcount loadings. We considered a virtually identical argument made in the comments of the California Telecommunications Coalition (Coalition) on the July 2, 1996 Proposed Decision (PD) that, with some modifications, was issued as D.96-08-021. Although we ordered Pacific in that decision to justify its treatment of approximately $145 million of "shared family" costs, none of the function codes subject to that requirement were included within the expense categories cited by Drs. Selwyn and Lundquist at pages 12-22 of their March 18 declaration. (**Mimeo.** at 20; Conclusion

of Law 4; Appendix A, p. 1.) In short, D.96-08-021 implicitly found that Pacific's treatment of these expense categories was reasonable, and Pacific has a valid point when it argues that Drs. Selwyn and Lundquist are merely trying to reargue an issue they have previously lost.

More significantly, however, we believe that Mr. Egan is correct when he argues that the costs AT&T and MCI want to assign on the basis of headcount loadings cannot be considered volume-sensitive merely because they vary with the size of the firm:

> "In this case, AT&T and MCI are attempting to take regulatory advantage of the fact that when any firm's output goes to zero (i.e., it has no subscribers), that firm will have little, if any, long run economic costs. Stated another way, if any firm's output were to double in the future, then it would likely have substantially more common costs. This simple observation notwithstanding, unless and until it [can] be conclusively demonstrated that common costs are in fact volume sensitive, as opposed to size sensitive, then it is not legitimate [in a long run incremental cost study] to attribute common costs to volumes of particular services." (4/15 Egan Declaration, pp. 2-3.)

Mr. Scholl has presented another good reason why AT&T and MCI's position must be rejected: namely, it is inconsistent with important understandings reached during the 1995 workshops that led to the Consensus Costing Principles:

> "[The AT&T/MCI position] disregards the agreements reached in the cost workshops which led to the [CCPs]. One such agreement was that, one determines the TSLRIC of a service by assuming the service is eliminated in its entirety with all other things remaining the same, including the size of the firm. In other words, the scale and scope of the firm are assumed to remain unchanged. This agreement was one of the underlying factors behind [CCPs] 2, 3, 4, 5 and 6." (4/15 Scholl Declaration, p. 9.)

Mr. Scholl is correct that this Commission has previously rejected the use of regression analyses to develop a factor for assigning common costs. D.96-08-021 states:

> "[W]e reject the suggestion that we should use these regression analyses to re-assign to specific services, costs that Pacific has treated as 'shared' or 'common'. First, our own review of the Coalition's regression analysis indicates that one-third of the LECs it sampled

> report significant shared and common costs, just like Pacific. Because the Coalition's argument ignores at least a third of its own study's data points, the study does not support a wholesale recategorization of shared and common costs . . .
>
> "More fundamentally, the use of a regression analysis to re-assign costs would be completely inconsistent with the 'bottoms up' TSLRIC approach we adopted in D.95-12-016. In our view, the [CCPs] we approved in that decision clearly disfavor the use of factors . . . The use of a regression analysis to justify the re-assignment of costs via factors would be the epitome of a 'tops down' approach . . . [and] would represent a return to the fully distributed cost methodology we rejected in D.94-09-065." (**Mimeo.** at 22.)

Although Drs. Selwyn, Lundquist, Kravtin, and Jorge attempt to make a stronger case for the use of their new regression analyses than was made in July 1996, they have not addressed our fundamental reservations about using factors to assign costs, nor have they satisfactorily explained how such an approach can be made consistent with the principle of cost causation. We therefore see no reason to depart from the conclusion we reached on this question in D.96-08-021.

We recognize that our conclusion will be seen by many as inconsistent with the FCC's approach in the First Report and Order. In its description of the TELRIC methodology, the FCC stated that shared and common costs should be assigned to individual network elements "to the greatest extent possible." (First Report and Order, para. 682.) We acknowledge that it is possible to read the FCC's language as not inconsistent with the use of overhead loading factors to "assign" shared and common costs.

However, there are two observations to be made on this question. First, as noted above in Section II, we have reserved the right to depart from a "strict constructionist" view of TELRIC when, as in this case, we consider such a departure justified. Second, to the extent that the First Report and Order can be read as endorsing the use of an "overhead loading factor" to assign shared and common costs, we think – for the reasons stated in D.96-08-021 and by Messrs. Egan and Scholl – that such an

approach is fundamentally inconsistent with the principles of cost causation that should govern a long-run incremental cost study.

In their January 16, 1998 opening comments on the DD, many parties have criticized the discussion of shared and common costs set forth above. (*See* AT&T-MCI Comments at 22-23, Cox Comments at 7-10, TURN Comments at 3-5.) With two exceptions, we conclude that the points made in these comments are without merit, and represent reargument of positions that, in some cases, the parties have been asserting since Pacific submitted its TSLRIC studies in 1996.

However, we agree with the FBC that Pacific should be required to submit an exhibit that shows which UNEs and services fall under which of the 20 cost families identified by Pacific in its January 13, 1997 TELRIC studies. (FBC Comments at 15.) We will require this exhibit to be included with Pacific's advice letter filing under G.O. 96-A. Second, at TURN's suggestion, we have modified the CRD to make more clear how we calculated the $68 million downward adjustment referred to in Section V.C. of this decision.

B. Has Pacific Assigned An Unreasonably Large Fraction Of "Shared Family" Costs to the Call Set-Up Function?

As noted above, Pacific's January 13 cost studies reflect the reassignment of approximately $500 million of "shared family" costs approved in D.96-08-021 directly to unbundled network elements, as required by TELRIC principles. Of this $500 million, Pacific determined that approximately $110 million should be assigned to switching elements, such as call set-up, usage, line ports, trunk ports and vertical features.

Approximately three-quarter's of the reassigned $110 million represents Right To Use (RTU) fees, i.e., license fees that Pacific pays for the use of switching software. Pacific assigned all of these RTU fees to the call set-up function.[53] As explained below,

[53] Switched calls (as distinguished from direct-trunked calls) are comprised of two sub-elements. The first is call set-up, which is the function necessary to initiate a switched call. The

Footnote continued on next page

AT&T and MCI contend that this is unreasonable, and that all of these RTU expenses should be assigned to line ports.

1. Positions of the Parties

AT&T/MCI witness Terry Murray argues that Pacific's approach is unreasonable, based upon her review of Pacific's switching contract with Lucent Technologies. Ms. Murray states:

> "Under Pacific's current contracts for digital switches, Pacific incurs expensed RTU fees on a per-line basis, not a per-message or per-processor basis . . . My review of the [Lucent Technologies] contract appears to confirm that this payment covers [several years] of 'expensed' RTU fees ... Therefore, the [TELRIC] principle of identifying costs with elements on the basis of cost causation dictates that Pacific should have added any expensed RTU fees beyond those already reflected in its SCIS investment output to the line port segment of the unbundled switching element, for which Pacific calculates costs on a per-line basis, rather than the call setup segment of the usage element, for which Pacific calculates costs on a per-message or per-call attempt basis." (3/18 Murray Declaration, pp. 13-14.)

Dr. Tardiff defends Pacific's assignment of RTU expenses. He points out that the purpose of switching software is to provide calling services, so "the cost driver is calling." Under the CCPs, Dr. Tardiff argues, this means that costs associated with calling should be assigned to calling rather than to lines, and that purchasers of unbundled switched usage rather than unbundled ports should pay the charges. He also suggests that Ms. Murray's position is based on the vagaries of the Lucent contract rather than on the actual processes of RTU cost incurrence. (4/15 Tardiff Declaration, p. 18.)

2. Discussion

We believe that both sides have taken extreme positions, and that assigning software RTU expenses exclusively to usage or to line ports would be inconsistent with

---

second sub-element is usage, which is the per-minute cost associated with maintaining a switched call. Usage is also referred to as "holding time".

the FCC's definition of local switching, a definition that Pacific was directed to follow in preparing its TELRIC cost studies. (December 18 ALJ Ruling at 12-13.)

In paragraph 413 of the First Report and Order, the FCC rejected an argument that vertical features should be excluded from the definition of local switching. The FCC reasoned that "vertical switching features, such as call waiting, are provided through operation of hardware and *software* comprising the 'facility' that is the switch, and thus are 'features' and 'functions' of the switch." (Emphasis added.)

When local switching is defined in this way, it suggests that software expenses should be assigned to *all* of the features and functions that are available through the switch, rather than exclusively to usage or to line ports, because the software supports *all* of the switch's features, not merely the capability of line cards.

Ms. Murray's suggestion that RTU expenses should be assigned solely to line ports would be analogous to assigning all the costs of a personal computer's operating system to a single application, rather than to all the applications that rely on the operating system. That would illogical, because the costs of an operating system are incurred to provide all of the PC's applications, not just one or two.

Dr. Tardiff's position is also extreme. His argument that RTU expenses should be assigned solely to the call set-up function ignores the fact that the capability to provide features and switching, including holding time, depends on software for which RTU fees must be paid.

In accordance with our conclusion, we will direct Pacific to reassign switch RTU and related expenses to all of the functions and features of the switch, including the call set-up function, holding time, ports and features, as well as to the tandem switching sub-elements.[54] The reassignment should be made on the basis of the

[54] In addition to ordering Pacific to reassign RTU fees to all the features and functionalities of the switch, we will require Pacific to justify in the upcoming pricing hearings why it believes all "spare" fiber capacity costs should, under TELRIC, be assigned to entrance facilities. In their opening comments on the DD, the FBC point out that while "entrance facilities are the only UNE which have been defined by the FCC that utilize fiber rings, . . . Pacific uses the rings to provide numerous retail DS-1 and DS-3 dedicated services[,] as well as other switched loop

Footnote continued on next page

aggregate level of capital costs per element, and company-wide volumes should be used rather than product volumes. The exact methodology to be used for the reassignment is set forth in the CRD. The reassignment should be made in an advice letter submitted pursuant to General Order (G.O.) 96-A, which will be due 15 days from the effective date of this order.

C. Has Pacific Improperly Included Costs Related to Retail Service In The Total Of Common Costs It Has Reported In Its TELRIC Studies?

As noted above, AT&T and MCI contend that Pacific has failed to remove some retail costs from the total "pot" of unassigned common costs it has reported. This is inconsistent with TELRIC principles, which require the removal of retail costs from the prices of UNEs because retail costs "are not attributable to the production of network elements that are offered to interconnecting carriers." (First Report and Order, para. 691, *quoted in* December 18, 1996 ALJ Ruling at 12.)

1. Positions of the Parties

Drs. Selwyn and Lundquist take the position that over $200 million of retail-related costs should be removed from Pacific's estimate of "variable overhead expenses". (3/18 Selwyn-Lundquist Declaration, p. 9.) They derive this total by multiplying the amount of overhead expenses claimed by Pacific for each of seven USOA accounts by a percentage that they claim is retail-related.

In its reply comments, Pacific acknowledges that while TELRIC requires the removal of retail expenses from "shared family" costs, it would be conceptually improper to attempt to remove retail expenses from the total of "shared common" costs. Mr. Scholl states:

---

services." (1/16/98 FBC Comments, p. 9.) Our reexamination of Pacific's TELRIC studies convinces us that there is merit to the FBC position. Under CCP No. 5, the recovery of common costs is treated as a pricing issue. Accordingly, we will consider in the upcoming supplementary pricing hearings how Pacific's spare capacity costs for fiber should be recovered.

> "By definition, there can be no retail-only costs in the 'shared common' category. Costs are assigned to shared common only if they are shared by all services, indistinguishably, including both wholesale and retail. The identification and quantification of shared common costs was, again, fully litigated in the TSLRIC studies and need not be reopened here." (4/15 Scholl Declaration, pp. 6-7.)

2. Discussion

On this issue, we think that AT&T and MCI have the better of the argument. Our own examination of the expenses that Pacific has designated as "shared common" indicates that some of these costs cannot truly be considered "common," because they have a clear retail component that, under the TELRIC methodology, may not be included in the determination of wholesale UNE costs.

Even though we have concluded that Pacific's total of "shared common" costs must be adjusted downwards, this does not mean that we accept the analysis offered by Drs. Selwyn and Lundquist. On the contrary, we think that the $200+ million reduction in common costs they are advocating is excessive.[55] The reduction advocated by Drs. Selwyn and Lundquist assumes that in a forward-looking environment, Pacific will be able to avoid substantial amounts of overhead (such as general, administrative and executive expenses) related to its retail operations. There is as yet no empirical evidence to support such an assumption. Instead of accepting the reductions proposed by Drs. Selwyn and Lundquist, we think -- based on the analysis set forth in the CRD -- that it is more reasonable to exclude approximately $68 million of Pacific's reported common costs as retail-related. The principal items that we are directing be excluded are expenses associated with retail sales and marketing activity, retail customer service

[55] In reaching this conclusion, we are not prejudging any of the issues that have recently been heard in the resale phase of this docket. The purpose of the resale hearings (which took place between November 12 and December 9, 1997) is to determine the appropriate discount (or discounts) that purchasers of resale service will receive based on the "tops down" formula specified in § 252(d)(3) of TA 96. In this phase, on the other hand, our task is to determine the retail portion of common costs that are likely to be incurred by Pacific in a forward-looking environment.

activity, and amounts for general administrative expense that are derived by averaging the number of wholesale loops sold against the total number of access lines.

D. Pacific Must Provide Additional Justification For Its Treatment Of Programming And Information Management Expenses

After a careful review of its cost studies, we have decided that Pacific's treatment of Programming and Information Management expenses (PIM) requires additional support. Additional support is required because, while Pacific has, in most instances, assigned a significant portion of PIM expenses directly to services and elements, it has not assigned the entire expense category . As a result, in excess of $100 million in PIM expenses continue to be categorized as shared common expenses.

It is not evident from reviewing Pacific's assignment process why *all* PIM expenses have not been assigned, in view of the fact that Pacific has been able to track most PIM expenses directly to projects. Pacific will therefore be directed to submit a detailed analysis of those PIM expenses it has been able to assign, as well as a detailed explanation for why it believes the balance of PIM expenses cannot be directly assigned. Pacific will be directed to submit this analysis under the G.O. 96-A advice letter process described elsewhere in this decision, and it will be subject to protest.

VI. ARE PACIFIC'S LOOP LENGTH ESTIMATES REASONABLE FOR THE PURPOSE OF DETERMINING LOOP COSTS UNDER TELRIC?

One of the largest bones of contention in the comments on Pacific's January 13 cost studies concerns the methodology Pacific used to develop loop costs.

Because the FCC's definition of the loop as a UNE does not differentiate between loops that serve business customers and those that serve residential customers, Pacific was required to develop "generic" loop costs. The only way this could be done was by taking a weighted average of Pacific's total population of loop lengths, which is the most important determinant (driver) of loop costs. Pacific developed its loop length sample from data contained in its Loop Facilities Assignment Center Systems (LFACS) data base. For each of the six "revenue zones" that Pacific reported (and for the statewide average loop length it computed), Pacific began with the service-specific

average loop lengths shown in its TSLRIC studies for each of six basic services.[56] Pacific then used the LFACS data to weight these service-specific loop length estimates for each of the revenue zones and for the statewide average.

As indicated below, the parties differ sharply over whether Pacific's LFACS-derived loop lengths are valid.

A. Description of Pacific's LFACS Data Base

In order to understand the parties' criticisms of Pacific's loop study, it is useful to have a basic understanding of just what data is contained in the LFACS data base, and how it was used.

Pacific's January 13 loop study is based on approximately 3 million access lines, encompassing 600 wire centers, taken from LFACS. These 3 million lines comprise nearly 20% of Pacific's total access lines.

At the time Pacific developed its loop sample, LFACS did not include all access lines. The reason for this is that while the data base listed all cables, it did not include "cable makeups" (i.e., data on distribution and feeder from which loop lengths can be determined) unless one of the pairs in the cable included a designed circuit. This means that loops for private lines and special access service tend to predominate in LFACS, along with very long switched service loops.[57]

---

[56] As noted in Dr. Cornell's March 18 declaration (at pages 11-12), the six services that were weighted to develop average loop length for each zone were residence, business, Centrex, Private Branch Exchange (PBX), coin and customer-owned pay telephone (COPT) access.

[57] According to deposition testimony elicited on the cost studies, Pacific has recently begun to enter data on cable makeup for all cables into LFACS, whether they contain a designed circuit or not. Pacific is also trying to enter cable makeup data on older cables without circuits, but that task had not been completed by the time the sample at issue here was taken. (3/18 Cornell Declaration, p. 21, paras. 61-63.)

B. Positions of AT&T, MCI and the Facilities-Based Commenters

The parties have attacked Pacific's LFACS loop study from opposite perspectives. AT&T and MCI argue that the LFACS sample is biased in favor of longer loops, while the FBC suggest that the sample is biased in favor of shorter loops.

In their March 25, 1997 supplementary comments,[58] AT&T and MCI argue that there are four reasons why Pacific's loop study is biased and cannot be relied upon. First, the workpapers that support the statistical validity of Pacific's study are missing, and the statistician who prepared them is apparently no longer employed by Pacific. Thus, AT&T and MCI argue, it is not possible to verify whether Pacific's sample is statistically significant and reliable. (March 25 Comments, pp. 5-7.)

Second, as noted above, AT&T and MCI contend that Pacific's sample is biased in favor of longer loops. This bias allegedly results from three factors: (a) the predominance of private lines, special access lines and very long residential loops in LFACS, (b) Pacific's decision to exclude "zero length" loops[59] from the sample, and (c) the use of Uniform Service Order Codes that had the effect of excluding 80% of PBX loops, which tend to be very short. (**Id.** at 8.)

Third, AT&T and MCI argue that Pacific purposefully excluded several important wire centers from its loop sample. Although Pacific has justified the exclusion on the ground that the excluded centers produced aberrant data, the now-departed statistician had decided, according to AT&T/MCI, that inclusion of these wire centers was necessary for a statistically-valid sample. (**Id.** at 6-7.)

---

[58] Because of Pacific's difficulties in responding to discovery requests about its loop studies, AT&T and MCI were permitted to submit a round of supplementary comments on these studies and on Pacific's geographic-deaveraging proposal on March 25, 1997, one week after the due date for opening comments. Pacific responded to both the March 18 opening comments and the March 25 supplementary comments in its April 15 reply comments.

[59] "Zero length loops" are loops that an LEC or CLC provides from a switching machine that is located on the customer's premises, such as an office complex or a university campus.

Finally, AT&T and MCI argue that Pacific's own experts have conceded during depositions that the LFACs data base is unreliable. (**Id.** at 8-10.)

In contrast to AT&T and MCI, the FBC suggest that the errors in Pacific's loop sampling techniques actually make it likely that Pacific's studies *understate* the statewide-average length (and cost) of loops. While noting that one cannot tell for sure because of the missing workpapers and other factors, the FBC argue that it is counter-intuitive that Pacific's loops costs would actually be lower under TELRIC than TSLRIC, because TELRIC requires the assignment of shared costs directly to UNEs. (3/18 FBC Opening Comments, p. 15.)

The FBC also argue that one should not include the cost of zero-length loops in determining average loop costs, because network configuration factors make it highly unlikely that CLCs will purchase any zero-length loops from Pacific. (4/15 FBC Reply Comments, pp. 9-10.)

C. Pacific's Position

In his April 15 reply declaration, Richard Scholl rejects the AT&T/MCI argument that LFACS is biased in favor of longer loops. If there is a bias, he argues, it is actually toward shorter loops, because the private line and special access lines that predominate in LFACS (because they have designed circuits) tend to be shorter on average than loops for other services. (4/15 Scholl Declaration, p. 48.)

Second, Mr. Scholl disputes AT&T and MCI's claim that zero-length loops should be included in the loop study. He asserts that such loops are really inside wiring or intrabuilding network cable, and as such are owned by someone other than Pacific, such as a highrise building owner or an airbase. To include such zero-length loops in the denominator by which Pacific's total loop investment is divided would, according to Mr. Scholl, result in a serious understatement of loop costs. (**Id.** at 27-28.)

Third, on the question of whether key wire centers were excluded from the sample, Mr. Scholl agrees that four wire centers should be included that were "unintentionally left out." However, his March 18 declaration suggests that including them will have a *de minimis* downward effect on average loop costs. (3/18 Scholl Declaration, p. 8-9, paras. 25-26.)

Finally, Mr. Scholl argues that the LFACS data base is reliable for determining loop lengths. However, he acknowledges that while LFACS' usefulness for determining the cost of *business* loops was apparent early in the cost study process, it was not until LFACS was used to help validate the CPM in 1995 and 1996 that its utility for determining *residential* loop costs became apparent.

Mr. Scholl states that it was evident in 1994 that for business loops, LFACS would yield reliable loop length data *by service*, as TSLRIC required:

> "In 1994 Pacific gathered LFACs data for its OANAD loop study. From that data, a Pacific Bell statistician . . . drew a random sample of 45 wire centers for a statistical analysis he was performing. In the process of his analysis, he identified the percentage of loops for each service which had cable make-up information. The percentage of business service loops found with cable make-up data ranged from 76% to 99%, while only 21% of residence service loops had cable make up data. Pacific used that result to determine that there was a sufficiently high percentage of business loops with data to suggest that the LFACS data could be used to estimate service-specific loop lengths for business services, but not for residential services." (**Id.** at 65-66.)

It was work on the CPM in 1995-96 that caused Mr. Scholl and his colleagues to change their minds and conclude that LFACS data could also be used to estimate residential loop lengths. While validating the CPM, Pacific analysts compared the CPM average residential distribution cable length with the results of two different random samples of residential loops, which had been taken at other times for different purposes. The average residential distribution cable length produced by the CPM was midway between the average values taken from these two other samples. Pacific then determined that the LFACS data produced average distribution cable lengths virtually identical to those from the CPM. Based on this, Mr. Scholl and his colleagues concluded that the residential distribution cable length data missing from LFACS was random, so that the LFACS data was reliable for residential loops, as well. (**Id.** at 67.)

D. Discussion

Although we share the commenting parties' disappointment that Pacific is unable to produce the 1994 workpapers on the statistical validity of the LFACS sample,

our own comparison of Pacific's January 13 loop study with the loop cost results produced by other models leads us to conclude that Pacific' study is sufficiently reliable.

As a general check on Pacific's TELRIC study, we compared the loop lengths it produced with the TSLRIC ones approved in D.96-08-021. From the complete universe of all loops represented in the TELRIC study, we calculated a statewide average loop length of approximately 11,600 feet. The statewide average loop length shown in the TSLRIC studies is very close, approximately 11,650 feet. Both of these averages are slightly shorter (and hence less costly) than the statewide average loop length produced by Version 2.2.2 of Hatfield, which is 11,889 feet.

Further, as Mr. Scholl argues in his April 15 declaration, the average loop length *by wire center* that Pacific has reported is quite close to the average length *by wire center* produced by Hatfield 2.2.2, especially if one excludes the low-density CBGs for which Version 2.2.2's modeling is clearly insufficient. We agree with the following summary by Mr. Scholl of how Pacific's TELRIC loop study compares with the Hatfield outputs:

> "When comparing [Hatfield 2.2.2's] average loop lengths by wire center to Pacific's average loop lengths, I draw two conclusions:
>
> "(1) For the rural wire centers, [Hatfield's] average loop lengths are wildly inaccurate. They are tens of thousands of feet longer than Pacific's actual loop lengths . . . Hatfield's loop lengths cannot be substituted for ours without seriously overstating loop costs.
>
> "(2) For the suburban and urban areas, the average loop lengths for [Hatfield] and for Pacific are comparable. For some wire centers, the [Hatfield] average loop lengths are longer than Pacific's; and for many wire centers, Pacific's and [Hatfield's] average loop lengths are very close to the same. Since Hatfield's loop lengths corroborate ours for suburban and urban areas, there is no need for adjustment of our loop lengths." (**Id.** at 61.)

Because the comparison with the TSLRIC loop study and the Hatfield outputs shows that Pacific's TELRIC loop lengths are reasonable, we have concluded that it is appropriate to disregard any theoretical problems associated with Pacific's techniques for sampling the LFACS data base. While colorable arguments can be made that the

LFACS data is biased (though the parties disagree in which direction), the "clustering" of statewide average loops lengths described above convinces us that Pacific's TELRIC study can be used to set statewide average loop costs.

However, before using Pacific's study, we will order that Pacific include in the loop data that it samples, four wire centers that Pacific conceded in its comments were "unintentionally left out." (3/18 Scholl Declaration, p. 9, para. 26.)[60] One of these wire centers is LSANCA02 in downtown Los Angeles, which has over 100,000 access lines.

Unfortunately, it will not be possible to use LSANCA02 data directly, as Mr. Scholl has proposed. The reason for this is that, as AT&T and MCI have shown, loop lengths from LSANCA02 are badly underrepresented in LFACS.[61] For example, even though this wire center has 17,500 PBX lines, only 26 of its PBX trunks are included in LFACS.

---

[60] In the DD, Pacific was also required to add zero-length loops back into its loop sample. (DD, pp. 63-64.) In their January 16, 1998 comments on the DD, both Pacific and the FBC have strenuously objected to this requirement. (Pacific Comments at 7-9; FBC Comments at 7-8.) Both argue that zero-length loops aren't local loops at all, but in fact are either intrabuilding cable network (INC) or inside wiring. Pacific's comments point out that INC was "deregulated" by this Commission in D.92-01-023 (43 CPUC2d 115), and inside wiring was "deregulated" by the FCC in its Second Report and Order in CC Docket No. 79-105. Thus, Pacific argues, "under the law, these facilities do not appear on our books, and we don't earn on them. Under the law, we can't 'unbundle' them and sell them to CLCs." (Pacific Comments at 7-8.)

Pacific's analysis is correct, and we have therefore decided that it would be inappropriate to require the inclusion of zero-length loops in Pacific's loop sample.

[61] In her April 15 reply declaration, Lana Hughes of AT&T states:

> "The LFACS data for this wire center appears to be aberrant for two reasons. The first reason is that this very large wire center serving well over 100,000 lines has the smallest number of loops with length data in LFACS. The second problem is that the loops that do have length data in LFACS are unexpectedly and implausibly long given the density of access lines per square mile in this wire center." (4/15 Hughes declaration, p. 4, para. 41 and Attachment B thereto.)

The thinness of data from LSANCA02 makes it necessary to use a proxy. We will therefore order Pacific to substitute average loop length data by service from wire center SNFCCA01, a large San Francisco wire center comparable to LSANCA02. Like its Los Angeles counterpart, the loops lengths in SNFCCA01 are quite short.[62]

VII. HAS PACIFIC CALCULATED THE PRODUCT MANAGEMENT EXPENSES FOR UNBUNDLED NETWORK ELEMENTS IN A REASONABLE MANNER?

Another issue related to Pacific's TELRIC studies is whether it has calculated "product management expenses" for unbundled network elements correctly. Product management expenses are non-volume sensitive expenses necessary to manage and support wholesale product offerings such as unbundled loops. The cost studies submitted by Pacific on January 13 included product management expenses, but they were substantially modified in the corrections Pacific submitted on February 7, 1997 (pursuant to an ALJ ruling at the January 28, 1997 PHC).

As the discussion below indicates, the principal issues with respect to product management expenses are whether Pacific has used appropriate proxies for estimating

---

[62] The substitution of this San Francisco data for the Los Angeles data should be made in the G.O. 96-A advice letter in which Pacific will re-estimate its statewide average loop lengths. In the advice letter, Pacific shall use the average loop lengths for PBX and Centrex in SNFCCA01 as proxies for the average loops lengths now proposed by Pacific for LSANCA02.

In their January 16, 1998 opening comments on the DD, the FBC suggest that it would be improper to use SNFCCA01 as a proxy for LSANCA02, because it is unclear whether the use of this proxy will make the sample "more 'accurate'", and because there is supposedly no "record evidence" justifying this substitution. (FBC Comments at 5-6.)

These criticisms are without merit. Data concerning the San Francisco wire center was set forth in the same place as the data concerning the Los Angeles wire center, viz., page 1 of Attachment B to the April 14, 1997 reply declaration of Ms. Hughes. Based on our expertise in telecommunications, it is reasonable for us as a Commission to conclude that the loop length characteristics between major metropolitan areas -- such as downtown San Francisco and downtown Los Angeles - would share many of the same characteristics, including shorter loops lengths and higher concentrations of business lines. Thus, our use of this proxy is reasonable, and the FBC's argument amounts to little more than a claim that in this case, the perfect should be preferred to the good.

them, and whether it has divided the total amount of product management expenses it calculates through these proxies by the appropriate number of units for each wholesale product.

A. The Position of AT&T and MCI

In their March 18 opening comments, AT&T and MCI have vigorously attacked Pacific's calculation of product management expenses. In the case of unbundled loops, one of the most important UNEs, AT&T and MCI argue that product management expenses are overstated by 700%.

The principal criticism of AT&T and MCI is that Pacific has not spread its estimate of product management expenses over an appropriate number of units. AT&T's and MCI's opening comments assert:

> "[Pacific] argues that because only wholesale costs are to be used, then only wholesale volumes (volumes sold to other [CLCs] and not Pacific's retail operation) should be used to determine per unit costs . . . This position flies in the face of the FCC's [First Report and Order] and common sense. While Pacific may incur some limited product management costs in providing UNEs to competitors, it also incurs such costs internally to provide the UNE component of retail service to end users. Consequently, product management costs should be spread across total service volumes to avoid discrimination impacts . . . This misapplication of the TELRIC method produces the lion's share of Pacific's inflation of non-volume sensitive costs." (3/18 Comments, p. 35.)

AT&T and MCI also dispute Pacific's use of its own retail products as proxies for estimating UNE product management expenses. Dr. Cornell contends that by using as proxies the product management expenses reported in its TSLRIC studies, Pacific has violated the assumption that product management expenses are non-volume sensitive, and has also overstated the amount of product management expenses that UNEs are likely to give rise to. (3/18 Cornell Declaration, pp. 6-7.) Dr. Cornell urges that the per-unit product management expenses for Pacific's own retail products should serve as a ceiling on what it can claim as product management expenses for UNEs:

> "The most Pacific should be allowed to claim as a proxy for the product management costs for [UNEs] is the per unit cost that applies to its retail

> services. To the extent that the amount claimed for two similar retail services differ, moreover, the lower estimate should be used, as product management involves some retail functions as well as wholesale functions. Pacific is much more likely to work harder to 'manage' those products it wants to sell than those [i.e., UNEs] it would just as soon not have to offer." (**Id.** at pp. 7-8, para. 19.)

B. Pacific's Position

In his April 15 reply declaration, Mr. Scholl disputes both prongs of the AT&T/MCI attack. First, he strongly disagrees that product management expenses for UNEs should be spread across total service volumes, because Pacific does not use UNEs in providing retail services to its customers. Noting that "Pacific has incurred no product management expenses for unbundled elements in the years when it only provided bundled services," Mr. Scholl argues that product management expenses for UNEs are unique, because "the product management expense [Pacific] will be incurring for unbundled elements is caused *only* because of the unbundled elements provided to wholesale customers." (4/15 Scholl Declaration, p. 21.)

However, Mr. Scholl defends Pacific's use of product management expenses for certain retail services as a proxy for estimating the product management expenses of UNEs. He argues that this is the least arbitrary approach:

> "The *average per-unit* cost of product management expense of some service is simply not relevant for determining the product management expense of another service (e.g., an unbundled element). The level of product management expenses are largely determined by the complexity of the product, and the frequency and complexity of developing enhancements to the product, not by the volumes of the product which are provided. Product management costs are thus, by definition, volume insensitive. The best way to approximate the product management expense of a new product is not to apply the per-unit average cost of some existing product. Rather, the best way is to identify an existing product with a similar level of complexity and expected development activities to the new product, and use the total product management expense of the identified existing product as a surrogate for the product management expense of the new product." (**Id.** at 22.)

C. Discussion

On this issue, we have concluded that AT&T and MCI have the better of the argument. While Pacific is certainly entitled to recover the reasonably-incurred product management expenses for UNEs, our review of its methodology for estimating these expenses persuades us that Pacific's approach does not take adequate account of economies of scale.

The point is well illustrated by considering how Pacific estimated product management expenses for unbundled loops. The proxy that Pacific chose for these expenses is 1MB (basic business) service. Pacific arrived at its estimate by dividing the total product management expenses for 1MB service shown in its TSLRIC studies by the currently-projected demand for unbundled loops. However, Pacific's submission indicates that the demand for 1MB service is more than three times the currently-projected demand for unbundled loops.[63]

Moreover, in choosing 1MB as the proxy, Pacific failed to explain why it did not use two similar loop-related business services that both have significantly lower demand estimates and correspondingly lower product management expenses. These two other services are PBX service and Centrex service.

In the case of unbundled loops, we think the correct approach for developing a proxy for product management expenses is to take the sum of product management expenses for the similar business services that require loops (i.e., 1MB, PBX and Centrex service), and then divide this total by the sum of the demand for each of these services. In this way, Pacific will have a proxy based upon very similar services, but one that also takes due account of the economies of scale inherent in its wholesale offerings. This approach will also eliminate the difficulties created by using the current, highly subjective estimates of demand for unbundled loops.

---

[63] The current estimate of demand for unbundled loops has to be taken with a tablespoon of salt. As AT&T and MCI state at page 37 of their March 18 comments, "permanent prices for UNEs and an ordering and provisioning system that can handle large scale orders [i.e., final OSS] will have to be in place before there is a real basis for predicting the likely use of [UNEs]."

For unbundled loops, the adjustment described above will reduce product management expenses by approximately $0.45 per loop, or $2.7 million dollars per year if one assumes that the demand for unbundled loops is about 500,000 loops per year.

Pacific should also undertake a similar exercise for recalculating the product management expenses for the other UNEs it will be required to offer pursuant to 47 C.F.R. § 51.319. The costs Pacific should use in estimating product management expenses for each UNE are set forth in the Pacific CRD.

VIII. MISCELLANEOUS ADJUSTMENTS TO PACIFIC'S TELRIC STUDIES ARE NECESSARY FOR CENTRAL OFFICE CROSS-CONNECTIONS, TWO-AND FOUR-WIRE LOOPS, WHITE PAGES DIRECTORY LISTINGS AND DS-1 ENTRANCE FACILITIES

In this section, we deal with adjustments to Pacific's TELRIC studies that we have concluded are necessary but which do not fit neatly within any of the previous categories we have discussed. The adjustments concern Pacific's cost studies for cross-connects, two-wire and four-wire unbundled loops, white pages directory listings and DS-1 entrance facilities.

A. Are The Costs That Pacific Has Reported For Central Office Cross-Connects Excessive?

Central office "cross connects" are used to cross connect the central office equipment of incumbent local exchange carriers (ILECs) such as Pacific with the collocated switches (and/or interoffice facilities) of CLCs. Central office cross connects are sometimes referred to as "jumper cables". In their comments, the FBC argue that Pacific's central office cross connects are needlessly "gold plated", while Pacific defends its design decisions.

1. Position of the Facilities-Based Commenters

In their March 18 opening comments, the FBC argue that while most ILECs around the nation design their central office cross-connects as simple jumper cables, Pacific has unnecessarily included "jack panels" and signal regeneration equipment in its cross-connects. This is unnecessary, the FBC contend, because CLCs are already

likely to have the trouble-isolating capabilities that jack panels provide, and because signal regeneration equipment is only rarely necessary.

With respect to jack panels, the FBCs state:

> "[P]acific's design includes a separate jack panel for each type of cross connection. The jack panels are ostensibly to be used to isolate trouble conditions on either Pacific's or the CLC's side of a collocation cage.[64] However, the CLCs' collocated multiplexing equipment and the equipment used to terminate Pacific's unbundled link elements already possess the electronic capability to isolate and locate trouble locations. Adding a costly, separate jack panel in order to further isolate troubles in the simple jumper cables is an optional design consideration which should be *jointly* determined by the two carriers, not designed into the generic unbundled element." (3/18 FBC Comments, p. 22; footnote omitted.)

With respect to signal regeneration equipment, the FBC argue that it should not be included in the cross connect UNE because it is likely to be needed only a small fraction of the time:

> "Regeneration equipment is only required when the length of a span exceeds a relatively long distance. Cross connections within a single Pacific wire center would rarely exceed that distance. Indeed, Pacific forecasts that regeneration equipment would be used in only a little more than 10 percent of all cross connections. Therefore, Pacific should have specified a separate design for this condition, not a single design applicable to all cross connections." (**Id.** at 23; footnotes omitted.)

Finally, the FBC suggest that Pacific has included these functions within its cross connects to keep down the price floors for its links, since the links CLCs will build as their presence increases in the local exchange market are likely to include some of the same digital cross connection and distribution frame technologies that Pacific has included in its unbundled cross connects. (**Id.** at 23-24.)

---

64 A collocation cage is a physically separate and secure facility within the premises of an LEC central office where transmission facilities owned and maintained by the CLC are terminated. For a further discussion of legal issues raised by various forms of collocation, see *Bell Atlantic v. FCC*, 24 F.3d 1441 (D.C. Cir. 1994).

2. Pacific's Position

Pacific defends its design assumptions for central office cross connects on the basis of the FCC's definitions of these unbundled elements. For example, in his April 15 declaration, Mr. Scholl argues that Expanded Interconnection Service Cross Connects, or EISCCs, are considerably more complex than simple jumper cables:

> "The EISCC unbundled elements are entirely different from [jumper cables]. They are used to provide a connection between a main distribution frame (in the case of the voice grade EISCC) or a digital cross connect system (in the case of a DS-0, DS-1 or DS-3[65] EISCC) and a competitor's collocation cage. At the very least, as in the case of a voice grade EISCC, it is a pair of wires in a cable terminating at one end on a main distribution frame (MDF), and at the other on a jack panel located near the collocation cage. It includes the MDF terminations as well as the jack panel terminations[,] as well as the pair connecting them. In the case of the DS-0 and DS-1 EISCCs, the termination on the digital cross connect system (DCS) is included as part of the EISCC." (4/15 Scholl Declaration, p. 84.)

With respect to signal regeneration equipment, Mr. Scholl argues that because it will be needed in some instances, the FCC's description of the TELRIC methodology requires Pacific to include it in the cross connect UNE. (**Id.** at 85.)

3. Discussion

In this case, we conclude that the FBC have the better of the argument. With regard to jack panels, we agree that CLCs will be in a credible position to determine the capability of their own collocated equipment. Thus, if they conclude that their own equipment has the capability to replicate the functions of a jack panel, they should not be required to incur the cost of Pacific's providing one. Accordingly, we will require Pacific in the upcoming pricing hearings to identify the proposed price of jack panels

---

65 A DS-0 line is a single digital voice-grade circuit that operates at 64 kilobits per second. A DS-1 line allows transmission of data at 1.544 megabits per second and is equivalent to 24 voice channels. A DS-3 line has 28 times the capacity of a DS-1 line, or 672 voice channels.

separately from the proposed price of cross connects. The costs adopted herein for the EISCC (on which these pricing proposals will be based) are set forth in the CRD. We also agree with the FBC that the cost of signal regeneration equipment should not automatically be included in cross connects. Pacific's January 13, 1997 cost studies demonstrate that signal regeneration equipment is needed only when cross connects are unusually long, and that this happens only about 10% of the time. Accordingly, Pacific will be required to state in its supplementary pricing testimony the proposed price of signal regeneration equipment as distinct from EISCCs that include such equipment.[66]

---

[66] In their opening and reply comments on the DD, the FBC have argued that Pacific should also be required to show the costs of a Digital Cross Connect System (DAX) separately from the costs of the EISCC. The FBC argue:

> "For the same reasons as the [DD] would require Pacific to break out the cost of jack panels and signal regeneration equipment, the Commission should also modify the [DD] to require Pacific to separately state the cost of [DAX] systems that Pacific admitted it had included in the cost of EISCCs. The [DAX] systems primarily offer a multiplexing function that may also reside in the separate equipment used in the CLC's collocation cage." (1/16/98 FBC Comments, p. 12.)

The FBC contend that Pacific should be required to provide in an advice letter "the engineering block diagrams used for costing purposes *with* the DAX and *without* the DAX," and that the DAX equipment assumed in the EISCC studies should be "identified by manufacturer, model number and price." (1/26/98 FBC Comments, p. 4.)

Although we are sympathetic to the argument that CLCs should not have to purchase equipment or functions that they can provide for themselves, we decline to require Pacific to make the showing requested by the FBC. The block diagrams and equipment information sought by the FBC is clearly cost information that should have been obtained by them during the discovery that took place on Pacific's TELRIC studies. In view of all the other issues that must be decided, it would not be efficient for us to elicit the requested cost information through the advice letter process, and then litigate in the upcoming pricing hearings whether, in fact, it is feasible to unbundle the DAX functions from the EISCC.

The ultimate issue raised by the FBC is what procedures this Commission should put in place to consider unbundling requests for network elements beyond those specified in 47 C.F.R. § 51.319. In *Iowa Utilities Board v. FCC*, the Eighth Circuit invalidated the regulation in the First Report and Order (47 C.F.R. § 51.317) that created a presumption that any element which it is technically feasible to unbundle must be unbundled. (120 F.3d at 810.) The FCC's

Footnote continued on next page

B. Are Pacific's Estimates of Operating Expense For Its Statewide-Average Two-Wire Loop Cost Reasonable?

1. Positions of the Parties

In her March 18 opening declaration, Dr. Cornell attacks not only the validity of Pacific's loop sample, but also the reasonableness of its estimate of operating expenses for loops (which consist mainly of maintenance). After noting that Pacific took a weighted average of the operating expenses for each of its end-user services to arrive at the average operating expense for unbundled loops, Dr. Cornell argues that in light of Pacific's deposition testimony, this approach is unreasonable. Dr. Cornell asserts that Pacific should assume the per-loop average operating expense that is associated with CLCs:

> "In [his deposition testimony], Mr. Scholl claimed that the volume-sensitive operating expenses of Pacific vary by services, with those services having a greater number of lines per customer exhibiting lower per line operating costs . . . In other words, on a per-customer basis, the volume-sensitive operating costs exhibit economies of scale.
>
> "Unbundled loops are a wholesale, not a retail[,] offering. Purchasers of unbundled loops, therefore, will most likely have characteristics much more like the largest volume retail users of loops, rather than like a weighted average of all retail users of loops, including residential users. In light of this, Pacific should have used the service with the lowest experienced volume-sensitive operating costs as the basis for its proxy for the volume-sensitive operating costs for unbundled loops." (3/18 Cornell Declaration, pp. 13-14, paras. 38-39.)

---

presumption was, the Eighth Circuit noted, inconsistent with the standards for unbundling set forth in § 251(d)(2) of TA 96. (**Id.**) Under the Eighth Circuit's decision, this Commission clearly has authority to decline to order the unbundling of the DAX from the EISCC at this time.

We also have authority, however, to order additional unbundling within the local exchange network upon an appropriate showing. We are currently considering how to develop a process for handling future unbundling requests in an orderly manner. While the existing record concerning the DAX and the EISCC is insufficient to justify the unbundling sought by the FBC, the FBC will have the option of invoking these new procedures in the event Pacific declines to address their unbundling concerns.

Dr. Cornell states that calculating operating expense in the manner she proposes will reduce the statewide average cost of an unbundled loop by about $1.25 per month. (**Id.** at 14, para. 40.)

In his reply declaration, Mr. Scholl argues that the weighted average approach to calculating loop operating expense is correct, and that Dr. Cornell's position is inconsistent with TELRIC principles:

> "The variation of loop maintenance costs by number of lines per customer is a function of the number of lines *per end user customer*, not per CLC. Dr. Cornell has presented no information which indicates that the number of lines per CLC end user customer will differ from Pacific's. Regardless, Dr. Cornell's proposal would violate the FCC's requirement that in determining the TELRIC of an element, the increment that forms the basis for a TELRIC study shall be the entire quantity of the network element provided." (4/15 Scholl Declaration, p. 46; emphasis supplied.)

2. Discussion

On this issue, it is clear that Pacific has the better of the argument. To base average loop operating expense on PBX loops, as Dr. Cornell in effect proposes, would prevent Pacific from recovering a substantial portion of the maintenance and other operating expenses it will incur in selling unbundled loops. Using PBX operating expenses as a proxy would be inappropriate because it would ignore such cost-causative relationships as the location of the PBX processing equipment, the density of the lines served, and the propensity of residential customers to incur higher average maintenance expenses and make more trouble repair calls than PBX customers.[67] The

[67] Ignoring these cost-causative relationships would be inconsistent with Consensus Costing Principle No. 2, which states, among other things, that "within the telecommunications industry, the principle of cost causation is best viewed from the standpoint of providing a service and what costs are necessary to offer that service. All costs caused by a decision to offer a service should be included in a TSLRIC study of that service." (D.95-12-016, App. C, p. 2.) Ignoring cost-causative relationships would also be inconsistent with paragraph 691 of the FCC's First Report and Order.

weighted-average approach that Pacific has used, on the other hand, ensures the recovery of all reasonable operating expenses associated with unbundled loops.[68]

C. Are Adjustments Necessary to Pacific's Studies for 4-Wire Loops?

Several parties, including the FBC and Cox, have attacked the validity of the assumptions in Pacific's cost study for 4-wire loops. Although 4-wire loops have traditionally been used only where voice service was provided over very long loops, they are expected to be much more important in the future. This is because, with the improved performance made possible by compression technologies, they could provide competitive substitutes for Integrated Services Digital Network (ISDN) links and other forms of Internet access technology.

1. Positions of the Commenting Parties

The basic theme in all of the comments is that Pacific's reported costs for 4-wire loops are unreasonably high in relation to its costs for 2-wire loops, and also to the costs of ISDN links, which provide some of the same capabilities as 4-wire loops.

Cox, for example, points out that Pacific's reported cost for the "wire" portion of 4-wire loop service in one of Pacific's revenue zones is nearly $25 per month, more than three times the reported cost for the wire portion of 2-wire loop service, and more than double the reported wire cost for an ISDN line, which Cox asserts is considerably

---

[68] Although we are sustaining Pacific's position on the loop operating expense issue, some corrections to the studies are needed.

Most of these corrections are set forth at pages 8-9 of Mr. Scholl's March 18, 1997 opening declaration. We will direct Pacific to make all of these corrections except for those relating to the so-called Loop Zone 1 corrections for LSANCA02, a large Los Angeles wire center. The approach Pacific should use with respect to LSANCA02 is set forth in Section VI.D. above.

We also agree with ORA's argument at page 9 of its March 18 opening comments that Pacific should be required to demonstrate that all loop-related repair expenses on which it is relying in computing its weighted average have in fact been reduced by 14%, as required by D.96-08-021. (**Mimeo.** at 65-66.) The affected function codes are set forth on page 7 of the Pacific CRD adopted in that decision.

more sophisticated.[69] (3/18 Cox Comments, pp. 38-40.) When one adds the cost of line cards (i.e., electronics needed to provide the service), the disparity is even greater.

The FBC also attack Pacific's 4-wire loop study, noting that the statewide-average cost Pacific reports is 4.85 times the statewide average for a 2-wire loops, even though "historically the rate and cost relationship for these types of special access lines has been fixed at 1.6." (3/18 FBC Comments, p. 25.) The FBC also suggest that since Pacific's 4-wire loop study includes both a separate line card *and* additional electronics for the fiber, there must be some duplication of costs involved:

> "Pacific's cost development used a type of line card for 4-wire circuits that provides the functionality electronically, much like current modems in home computers provide improved quality and throughput without upgrading access lines for ordinary telephone service. In addition to this line card cost, however, Pacific's cost analysts also doubled the outside plant facilities; ostensibly to reflect the '4-wire' character . . . The two cost adjustments are redundant and duplicative. The FBCs recommend that the Commission order Pacific to verify the need for the line card. In addition, the cost associated with the doubling of the outside plant facilities should be removed from the cost of 4-wire links." (**Id.** at 26; footnotes omitted.)[70]

---

[69] Cox summarizes the differences between a 4-wire line and an ISDN link as follows:

> "[T]he four-wire voice circuit provides a separate voice path in each direction and is capable of providing voice service or voice-band data services, perhaps up to 28.8 kBps. The ISDN card, however, provides two voice channels, or a voice channel and a data channel, or two data channels each capable of 56/64 kBps or a combined rate of 128 kBps plus a 16 kBps data channel[,] for a total of 144 kBps. With ISDN you can still transmit and receive digital data, or imagery such as graphics and facsimile at the same time you are engaged in conversation. It is a much more sophisticated and advanced service than is four-wire voice service." (3/18 Cox Comments, p. 39.)

[70] Dr. Cornell makes a similar point in her March 18 declaration on behalf of AT&T and MCI. She argues that there is likely double-counting because Pacific shows two 2-wire plug-ins and twice as much fiber for a 4-wire as for a 2-wire loop. (3/18 Cornell Declaration, pp. 28-29, paras. 86-87.)

2. Pacific's Position

In his April 15 reply declaration, Mr. Scholl argues that the cost comparisons made by Cox and the FBC are simplistic. With respect to the "historic" 1.6 ratio cited by the FBC, Mr. Scholl argues that it applied only when both services were provided over copper pairs, and not--as will be the case in a forward-looking network--when service will be provided over a combination of fiber and copper. As to the additional electronics required for fiber, Mr. Scholl asserts that such electronics are very expensive:

> "In the forward-looking network which is the basis of Pacific's TELRIC study, *services* which require four wire loops will be provided on two copper pairs only when the feeder is less than 12 Kft. long. Fiber-optic systems with appropriate plug-in units will be used for the feeder when is longer than 12 Kft. Pacific's identification of the TELRIC for 4-wire links is that the element will be two copper pairs for feeder lengths up to 12 Kft., and fiber-optic systems for feeder lengths beyond 12 Kft. All distribution plant used will be two copper pairs. For the fiber-optic system plug-in units required for the 4-wire link, Pacific used the plug-in units for DS-0 service, which is the most basic service requiring 4-wire links. Plug-in units for DS-0 service are significantly more expensive than that used for a basic POTS link." (4/15 Scholl Declaration, p. 86.)

3. Discussion

In the draft decision mailed on December 23, 1997, the ALJ required Pacific to provide further justification for the 4-wire loop costs it had reported. The DD noted that while Pacific claimed that additional electronics were necessary to offer 4-wire service on a fiber-copper system, it had not addressed FBC's argument that there was no need to have both the electronics and the additional line card that Pacific apparently had assumed. The DD also pointed out that the prices for 4-wire loops adopted in other states seemed to support the position of FBC and Cox that Pacific's reported costs were excessive.[71] The DD stated that until Pacific provided further justification, "we

[71] The DD noted that for the New York Telephone Company (NYNEX), the monthly price of a 2-wire loop was $12.49, while the monthly charge for a 4-wire loop was $27.67. The DD

Footnote continued on next page

will disallow the cost of the station facility interface connection. Pacific will also be directed to remove the double fiber costs from its estimate of 4-wite loop costs." (DD, p. 76-77.)

In its opening comments on the DD, Pacific proposes to meet the DD's concerns by stating separately the costs of 4-wire loops provided on copper versus those provided on fiber. After noting that 4-wire loops do ***not*** require line cards, Pacific explains:

> "In a *copper* feeder environment, this 4-wire functionality is accomplished by having separate feeder pairs for each path; that is, two copper pairs. In a *fiber* feeder environment, the separation of sending and receiving paths is provided in the Lightspan system by using a different electronic plug-in unit at the central office end and at the remote terminal than is used for POTS [Plain Old Telephone] service. This plug-in unit is more than twice as expensive as a POTS service plug-in unit. In addition, this plug-in unit occupies twice the space in the Lightspan, consuming twice the 'fiber capacity'.
>
> * * *
>
> "Since the costs to provide a 4-wire link over fiber feeder facilities is so much more than providing the service over copper facilities, Pacific believes that the costs (and ultimately, rates) should be stated separately. This would be consistent with the [DD's] treatment of jack panels, cross connects, and signal regeneration equipment." (1/16/98 Pacific Comments, pp. 13-14.)

Although this new unbundling proposal is opposed by the FBC,[72] it and the rest of Pacific's explanation move toward meeting some of the concerns expressed in the DD. However, Pacific will be required to furnish more justification for the costs of its interface connections and plug-in devices (such as capacity assumptions), and – as the DD required – to remove double-counted fiber costs. Finally, Pacific's proposal will

---

pointed out that these NYNEX prices were much closer to the historic price relationship between 2-wire and 4-wire loops than the nearly 5-to-1 cost difference reported by Pacific.

[72] 1/26/98 FBC Reply Comments, pp. 12-13.

be acceptable only if it establishes costs for four-wire *switched* loops, as opposed to four-wire loops that terminate on a DAX. We will reserve judgment on Pacific's proposal until after Pacific furnishes the necessary additional support for its four-wire proposal, which should be done in the G.O. 96-A advice letter that Pacific will be submitting pursuant to this decision.

D. Are Adjustments Necessary to Pacific's Studies For White Pages Directory Listings?

The parties have raised two issues with respect to Pacific's TELRIC study for directory listings in white pages. The first is a matter on which all parties agree: Pacific simply failed to divide the annual total of non-volume sensitive costs by 12, so as to derive a monthly total. Pacific agrees this correction is necessary,[73] and we will therefore direct that the correction be made in Pacific's G.O. 96-A advice letter filing.

The second issue is whether Pacific's white pages directory listing costs include retail costs that, under the TELRIC methodology, must be excluded. The FBC argue that Pacific has improperly included about $4 million of such costs:

> "The [roughly $4 million] in non volume sensitive fixed costs shown by Pacific are drawn from Function Codes 2510 through 2518. [Most] of these costs are associated with Pacific's preparation of its customer 'guide pages' in the directory. CLCs must prepare their own guide pages[;] Pacific has made no offer to have its staff perform this function for CLCs. Therefore, these non volume sensitive costs are inappropriately attributed to CLC listings. [The remaining costs are] associated with volume related service order processing for Pacific's listings. Again, CLCs will process their own orders for such listing[s], and thus should not bear any of these costs." (3/18 FBC Comments, pp. 26-27; footnote omitted.)[74]

Although Pacific's April 15, 1997 reply comments did not defend the inclusion of these costs, Pacific makes a strong argument in its opening comments on the DD that

[73] 3/18 Scholl Declaration, p. 8, para. 24.

[74] Dr. Cornell makes the same point with respect to special directory listings at pages 31-32 of her March 18 declaration.

about 75% of the customer guide costs are properly included in a TELRIC study.[75] After noting that the customer guide contains "useful public service information" about such things as emergency crisis hotlines and survival information, and that some CLCs have asked that this be licensed to them, Pacific states:

> "CLCs whose company-specific pages are included in the Customer Guide directly benefit from being part of the Customer Guide, as do their customers who receive the directories. If CLCs published their own directories, they would need to compile the information themselves. Since CLCs are receiving this benefit, the costs for producing it should be included in the TELRIC." (1/16/98 Pacific Comments, p. 11.)

We agree that CLCs benefit from the inclusion of this information in the Customer Guide, and that these costs (which total about $3 million) are properly allowable.

E. Are Adjustments Necessary to the Fill Factor That Pacific Has Assumed For DS-1 Entrance Facilities?

Cox argues that the Commission should adjust several of the "fill factors" that Pacific has used to estimate non-volume sensitive costs for spare capacity.[76] The essence of Cox's argument is that the methodology Pacific currently employs to estimate fill factors allows Pacific to recover a substantial level of stranded investment. (3/18 Cox Opening Comments, pp. 36-37.) As one of several allegedly dramatic examples, Cox points to the proposed fill factor for entrance facilities. For DS-1 circuits, Pacific is proposing a fill factor 28%. Cox argues that a fill factor of approximately 90% would be appropriate, because the DS-1 entrance facility is composed of fiber, and fiber has a capacity of 100%.

---

[75] Pacific concedes that about one quarter of the information in the Customer Guide is "specific to Pacific Bell products and customer service," and so should not be included in the TELRIC study.

[76] Fill factors, which are also called utilization levels, are explained at pages 23-24 of D.96-08-021.

In his reply declaration, Mr. Scholl argues that Pacific's fill factors are consistent with the First Report and Order, which requires only that "reasonably accurate fill factors" be used. Thus, he disputes Cox's conclusion that Pacific's TELRIC studies are designed to recover stranded investment. (4/15 Scholl Declaration, p. 90.)

Although we do not agree with Cox's overall position, and believe many of its arguments concerning "stranded investment" are duplicative of those made (and rejected by us) in connection with Pacific's TSLRIC studies, we do agree that Pacific's fill factor for DS-1 entrance facilities appears quite low in relationship to the total capacity, 100%, that is available on fiber-based DS-1 circuits.

Accordingly, we will order Pacific to use the same method of calculating the fill factor for DS-1 entrance facilities that we directed Pacific to use for copper feeder in D.96-08-021. In that decision, we directed Pacific to use a fill factor for copper feeder of 76%, which was the midpoint between Pacific's reported fill-at-installation and its fill-at-relief. (**Mimeo.** at 31-32.)

In their January 16, 1998 opening comments on the ALJ's draft decision, AT&T, MCI, and the FBC all argue that the DD's treatment of entrance facilities is inconsistent, because it does not require that this same fill factor adjustment be made for DS-3 circuits. The FBC argue:

> "[The DD's] logic and the fill factor adjustment applied to DS-1 entrance facilities applies with equal force to DS-3 entrance facilities. Pacific's spare capacity cost calculations in the underlying TSLRIC study are based upon a weighted average of both DS-1 and DS-3 utilization of fiber rings. Therefore, Pacific should be required to apply the same fill factor adjustment to DS-3 TSLRIC costs in order to derive comparable TELRIC values." (1/16/98 FBC Comments, p. 10; footnote omitted.)

Pacific, on the other hand, criticizes the DD's decision to increase the fill factor applicable to DS-1 facilities. Pacific contends that although its 28% fill factor may appear low, it is in fact realistic. This is so, Pacific asserts, because the "sizable modularity" of electronics requirements for DS-1 facilities, coupled with the low cost of higher speed electronics upgrades (e.g., to DS-3 lines), make it very difficult for Pacific to manage its fiber inventory, and necessarily results in a low utilization rate.

We conclude that AT&T, MCI, and the FBC have the better of the argument, and that Pacific should be directed to apply the same fill factor for DS-3 facilities that we have ordered for DS-1 facilities. One of the reasons for our conclusion is that Pacific has effectively admitted in its reply comments that its DS-1 facilities are under-utilized. Pacific's reply comments state:

> "[B]ecause of the relative cost differences [between DS-1 and DS-3 circuits], most customers requiring more than 28 DS-1 channels will purchase DS-3 circuits instead, and provide their own DS-1 to DS-3 multiplexing. Given this expectation, the expected average number of DS-1 circuits at a Fiber-Optic Terminal equipped to provide DS-1 circuits is less than 24." (1/26/98 Reply Comments, p. 12.)

In the example given by Pacific, more than 50 DS-1 channels will be under-utilized when customers opt to purchase DS-3 circuits. It is unreasonable for Pacific's entrance facility cost studies to assume such large percentages of spare capacity if the solution is simply for customers to buy DS-3 circuits.

The adjustment in fill factor that we are ordering for DS-1 and DS-3 will reduce Pacific's estimate of spare capacity costs associated with entrance facilities by approximately $38.4 million.

IX. SHOULD PACIFIC'S PRICES FOR UNBUNDLED NETWORK ELEMENTS BE GEOGRAPHICALLY-DEAVERAGED, AND IF SO, WHICH IF ANY OF THE COMPETING GEOGRAPHIC-DEAVERAGING PROPOSALS SHOULD BE USED?

The final issue we deal with in this decision is whether the prices that we will set for the UNEs to be sold by Pacific should be "geographically-deaveraged".

A. Background

Geographic deaveraging is the term used to describe a situation in which prices for telecommunications services (or elements) differ from geographic area to area depending upon the costs of serving the area at issue. While some costs (such as switching) do not exhibit geographic differences, others – especially the cost of loops – exhibit wide differences depending on the region being served.

In the past, Pacific has argued that it should be allowed to set geographically-deaveraged rather than state-wide prices, because otherwise CLCs with lower costs will

be able to undercut it in geographic areas that are less expensive to serve, even when Pacific is in fact the lowest-cost provider. CLCs who plan to build their own facilities have also stressed the importance of geographic deaveraging, and argue that unless the Commission gets it right, inefficient pricing signals will be sent when facilities-based CLCs are making their "buy or build" decisions.

Although everyone recognizes the importance of the geographic deaveraging debate, it is also universally acknowledged that it is a highly complex exercise. Complexity is inherent because incomplete geographic deaveraging (i.e., deaveraging less than all affected services and elements) can result in distorted pricing signals that are worse than the situation brought about by charging state-wide average prices.

It was because of this complexity that the assigned ALJ concluded in his March 25, 1996 ruling[77] that proposals for geographically-deaveraged prices should not be considered in the 1996 pricing hearings. After noting the assertion of the Coalition that consideration of geographic deaveraging "would effectively be abandoning any hope" of setting network element prices by January 1, 1997, as contemplated by Public Utilities (PU) Code § 709.5, the assigned ALJ concluded:

> "We agree with the Coalition that geographic deaveraging is too large an issue to consider in the upcoming hearings. Not only would it seem to require the kind of [extensive] evidence described by the Coalition, but if the Commission allowed geographic deaveraging for BNFs and services, it would logically have to examine the issue for resale services as well." (March 25, 1996 ALJ Ruling, **mimeo.** at 13.)

The question of geographic deaveraging arose again after issuance of the FCC's First Report and Order, in which the FCC required states to devise geographically-deaveraged prices as part of the "rate structure" rules to be used in conjunction with the TELRIC methodology. (First Report and Order, paras. 764-65.)

[77] Administrative Law Judge's Ruling Setting Forth the Scope of Issues To Be Decided In Pricing, Tariffing and Unbundling Hearings (March 25, 1996 ALJ Ruling).

The FCC's geographic deaveraging requirement was, like TELRIC, stayed by the issuance of the October 15, 1996 Stay Order in *Iowa Utilities Bd. v. FCC*. Nonetheless, the December 18, 1996 ALJ Ruling decided that, to hedge against the possibility the FCC might prevail in the Eighth Circuit litigation, Pacific and GTEC should be required to submit costs that could be used to set geographically-deaveraged UNE prices. (**Mimeo.** at 26.) Because the two LECs appeared to favor different forms of geographic deaveraging,[78] they were each given latitude to submit their own proposals, along with a statewide average cost for each UNE. However, the December 18 ALJ Ruling cautioned that these steps did not mean the Commission would necessarily adopt geographic deaveraging:

> "The fact that we are permitting the LECs to choose what form of deaveraging to include in their cost studies should not be taken as an endorsement of any particular approach, or as an indication that the network element prices to be adopted . . . will necessarily be geographically-deaveraged. After a detailed examination of [Pacific's] 'revenue zone' approach, for example, the Commission may well conclude that it will not work in practice." (**Id.**)

Pursuant to the directive in the December 18 ALJ Ruling, the TELRIC studies submitted by Pacific on January 13, 1997 presented geographically-deaveraged costs for network elements based upon the "revenue zone" approach, as well as statewide average costs. The comments submitted by the parties have devoted substantial attention to these proposals, and it is now time to decide whether the revenue zone approach is a suitable foundation for setting geographically-deaveraged UNE prices for Pacific.

B. Description of Pacific's Revenue Zone Approach to Geographic Deaveraging

Revenue zones were first proposed by Pacific in the arbitrations conducted in the Fall of 1996 pursuant to § 252(b) of TA 96. In its arbitration with AT&T, Pacific witness

[78] As noted in the December 18 Ruling, GTEC had in the past favored the FCC's "zone density" approach, while Pacific favored a new proposal it described as "revenue zones". The mechanics of the revenue zone approached are described *infra.*

Nancy Lubamersky presented the following summary of the revenue zone approach, which is quoted by Dr. Cornell in her March 18 declaration:

> "Wire centers were assigned to Zone 1 by identifying those wire centers which ranked highest in business segment total billed revenues (TBR) and which also made up 10% of total retail business and residence TBR cumulatively.
>
> "The remaining wire centers were ranked in order from highest to lowest total TBR. Wire centers were assigned to Zone 2 such that the cumulative TBR of Zones 1 and 2 combined made up approximately 33% of total TBR (with a total of six zones, these first two zones represent 33% of all zones).
>
> "Wire centers were assigned to Zones 3 through 6 by having each make up roughly equal proportions of remaining total TBR (approximately 16.5% each.) Zone 3 contained wire centers with the relatively higher TBR ranking, Zone 6 the lower ranking.
>
> "Finally, a contiguity adjustment was made to ensure reasonable zone transitions between wire center boundaries. For example, if a single wire center was initially designated as Zone 3 and was surrounded by wire centers designated as Zone 2, the Zone 3 wire center was changed to Zone 2." (3/18 Cornell Declaration, p. 16, para. 46, *quoting* Testimony of Nancy Lubamersky in A.96-08-040.)

C. Positions of the Commenting Parties

AT&T and MCI urge us to reject the revenue zone approach on the ground that it is not cost-based. In her March 18 declaration, Dr. Cornell argues:

> "The use of total billed revenues as the basis for deaveraging prices allows Pacific to average together relatively low and relatively high cost areas in order to mask the cost differences. The result is higher costs in the low cost areas than would be shown if geographic zones were based purely on cost characteristics. Given that the costs are supposed to be the basis for prices [under TA96}, Pacific's approach is a means of limiting entry into the lowest cost exchanges by forcing higher prices in those areas than would otherwise occur." (3/18 Cornell Declaration, pp. 16-17, para. 47.)

During the discovery process, AT&T and MCI conducted a detailed examination of Pacific's data in an attempt to determine Pacific's loop costs by wire center, using both the zone average data and Pacific's statewide average. This examination was

performed by AT&T witness Lana Hughes. The results of Ms. Hughes's analysis demonstrate, she claims, that Dr. Cornell is correct, and that Pacific's revenue zones do not bear a reasonable relationship to its costs. Ms. Hughes describes the results of her calculations as follows:

> "First, I sorted the data by cost of loop and graphed the results of the calculations I performed. [My first graph] contrasts the results using the statewide average data with the zone data. As one can see, the zone-based results produce wire-center costs that are slightly below the statewide-average-based results at the low-cost end, and slightly above the statewide-average-based results at the high-cost end. In other words, the more one move[s] toward wire-center specific information, the more steeply sloped the results become. In both cases, however, there is a clear trend, with some wire-centers having significantly lower cost per loop than others.
>
> "When I overlaid Pacific's zones on the data I had calculated, some striking patterns developed. [My second graph] demonstrates that Pacific's proposed zones do not even come close to reflecting any underlying variation in cost (using Pacific's own cost data). The range of costs for wire-centers in zones 2, 3, 4 and 5 overlap. The range is slightly higher in zones 4 and 5; however, the lowest-cost wire-centers in each zone have lower average loop costs than do the highest-cost wire-centers in the immediately preceding zone. Most dramatic of all is that Pacific has included all the zero-cost wire-centers in zone 6 together with the highest cost wire-centers in its service territory. Mr. Scholl has admitted that some of these wire-centers do not have loops because they connect directly to business customers' facilities; therefore, Pacific's inclusion of these 'zero-cost' wire-centers in zone 6 is entirely inappropriate. The result of Pacific's assignment of wire-centers to zones is to increase the average cost per loop for the lowest-cost zones above what a truly cost-based zone would justify." (3/25 Hughes Declaration, pp. 4-5, paras. 28-29.)

D. Pacific's Position

While Pacific's April 15 reply comments offer a vigorous defense of its loop sample (as described in Section VI.C. of this decision), none of Pacific's witnesses offers a defense of the revenue zone approach, or attempts to discredit Ms. Hughes's analysis.

E. Discussion

We agree with Dr. Cornell and Ms. Hughes that Pacific's revenue zone approach must be rejected. The underlying principle of the unbundling provisions in TA 96--and the theoretical justification for geographic deaveraging --is that prices for UNEs should be based on the ILEC's costs. Ms. Hughes has convincingly demonstrated that Pacific's revenue zone proposal does not satisfy this test.

The only other geographic deaveraging proposal in this record is the argument by AT&T and MCI that we should use Version 2.2.2 of the Hatfield Model to calculate geographically-deaveraged loop costs. In their March 25 supplemental comments, AT&T and MCI have presented an extensive declaration by Mr. Race Chen purporting to show why we should use Hatfield for this purpose. However, for the reasons stated above in Section III.C., it is evident that Hatfield 2.2.2 is ***not*** suitable for this purpose. As we have seen, Hatfield 2.2.2 produces unreasonably high loop costs for rural areas, and the methodology it employs for geographic deaveraging would only tend to exacerbate the problems caused by the model's internal assumptions about rural areas. Since unbundled loops are the principal UNE showing cost differences by geographic area, this shortcoming in Version 2.2.2 of Hatfield is fatal.

Consistent with the discussion above, we will establish only statewide-average prices for Pacific's UNEs in the upcoming supplementary pricing hearings.

In their January 16, 1998 opening comments on the DD, AT&T, and MCI assert that it would be "legal error" for us not to adopt – at a minimum -- geographically deaveraged loop costs, because otherwise we would be "prejudg[ing] issues the Commission has set aside for [the pricing] phase of this proceeding." (AT&T/MCI Opening Comments, p. 19.) This contention is without merit. As Pacific notes in its reply comments on the DD, our decision to adopt only state-wide average prices for UNEs at this time is "well within [the Commission's] discretion to decide the order in which it decides issues." (1/26/98 Pacific Comments, p. 13.) Moreover, our decision not to adopt geographically-deaveraged prices (or costs) at this time is consistent with the observations above that geographic deaveraging is complex, and can lead to market

distortions unless it is undertaken for all UNEs and retail services at the same time. (**Id.**)

X. COMMENTS ON THE DRAFT DECISION

As indicated above, the assigned ALJ's draft decision was mailed to the parties on December 23, 1997, along with a Ruling from the Chief ALJ directing that opening comments be filed no later than January 7, 1998. By ALJ Ruling dated December 29, 1997, the due date for opening comments was extended to January 16, 1998, and the due date for reply comments on the DD was extended to January 26, 1998.

On January 16, 1998, opening comments on the DD were submitted by Pacific, GTEC, Cox, TURN, and the FBC. Joint opening comments were submitted by AT&T and MCI.[79] On January 26, 1998, reply comments on the DD were filed by Pacific, GTEC, and the FBC. AT&T and MCI filed joint reply comments.

We have carefully considered all of these comments, and changes in response to them have been made in Sections III.I., IV.C., V.A.3., V.B.2., VI.D., VIII.A.3., VIII.C.3., VIII.D. and VIII.E. of this decision, among other places.

Findings of Fact

1. On August 8, 1996, the FCC issued its First Report and Order in CC Docket No. 96-98.

2. In response to the First Report and Order and a statement made in D.96-08-021 (**mimeo.** at 82), the assigned ALJ issued a Ruling on August 21, 1996 inviting the parties to comment on the effect of the FCC's First Report and Order on the unbundled network element phase of this proceeding.

---

[79] Owing to bad weather and other problems, AT&T/MCI and Cox were unable to file their opening comments with the Commission's Docket Office by the close of business on January 16, but all parties were served by mail that day. The Cox and AT&T/MCI comments were filed with the Docket Office on January 20, the next business day. Cox and AT&T/MCI have both filed motions to accept the filing of their comments late, and under the circumstances, we will grant these motions.

3. In response to the August 21 ALJ Ruling, opening comments were filed on September 6, 1996, and reply comments on September 20, 1996.

4. On October 15, 1996, the United States Court of Appeals for the Eighth Circuit issued an order that stayed, pending a final decision on the merits, the "pricing rules" and the "pick and choose" rule set forth in the FCC's First Report and Order. (*Iowa Utilities Bd. v. F.C.C.*, 109 F.3d 418 (8th Cir.), *motion to vacate stay denied*, 117 S.Ct. 429 (1996).)

5. On December 18, 1996, the assigned ALJ issued a Ruling concerning the impact of the First Report and Order and the Eighth Circuit's October 15 Stay Order on this proceeding.

6. In response to the December 18 ALJ Ruling, Pacific submitted cost studies on January 13, 1997 for all of the UNEs prescribed in the First Report and Order except OSS.

7. In response to the December 18 ALJ Ruling, AT&T and MCI submitted documentation describing Version 2.2.2 of the Hatfield Model, along with outputs based on this version, on January 13, 1997.

8. On January 28, 1997, a PHC was held concerning issues raised by the December 18 ALJ Ruling, as well as the proposed procedural schedule set forth therein.

9. In response to an oral ruling at the January 28, 1997 PHC, Pacific submitted certain corrections to its January 13 cost study submission on February 7, 1997.

10. On March 4, 1997, the assigned ALJ issued a Ruling resolving issues raised at the January 28, 1997 PHC.

11. On March 18, 1997, opening comments on Pacific's January 13, 1997 cost study submission were filed by ORA, TURN, Cox and AT&T Wireless. Joint opening comments on the Pacific submission were filed by AT&T and MCI, and by the FBC.

12. On March 18, 1997, Pacific and GTEC filed opening comments concerning Version 2.2.2 of the Hatfield Model and outputs based thereon.

13. On March 25, 1997, AT&T and MCI filed supplementary opening comments concerning Pacific's cost studies for loops and the geographic deaveraging proposal it submitted on January 13, 1997.

14. On April 15, 1997, reply comments concerning Pacific's January 13, 1997 cost study submission were filed by ORA, TURN, Cox, AT&T Wireless, Pacific, and GTEC. Joint reply comments on Pacific's submission were filed by the FBC, and by AT&T and MCI (whose comments also addressed Version 2.2.2 of the Hatfield Model).

15. The costing of OSS is likely to have a large impact on the level at which NRCs for unbundled network elements will be set.

16. In conjunction with the Local Competition proceeding (R.95-04-043/I.95-04-044), PHCs concerning OSS issues were held on March 11, March 25, and May 13, 1997.

17. In conjunction with the Local Competition proceeding, workshops concerning OSS issues were held on March 14 and on April 29- May 2, 1997.

18. On August 22, 1997, the ALJs assigned to this docket and the Local Competition proceeding issued a Ruling establishing a separate OSS/NRC/Changeover phase of this proceeding.

19. On July 18, 1997, the Eighth Circuit issued its decision on the merits in *Iowa Utilities Bd. v. F.C.C.* (120 F.3d 753 (8th Cir. 1997)).

20. On October 14, 1997, the Eighth Circuit issued an Order granting in part petitions for rehearing of its decision on the merits in *Iowa Utilities Bd. v. F.C.C.* This Order struck Part II(G)(1)(f) of the July 18 opinion substituted a new part in its place.

21. On January 26, 1998, the United States Supreme Court granted petitions for writs of certiorari that had been filed by AT&T, MCI, and the United States, among others, seeking review of the decision on the merits in *Iowa Utilities Bd. v. F.C.C.*.

22. The amount of shared family and common costs reported by Pacific in the TSLRIC studies adjudicated in D.96-08-021 was approximately $2 billion, whereas the amount of unassigned shared family and common costs reported in Pacific's January 13, 1997 cost submission is approximately $1.2 billion.

23. The removal of retail costs from the shared family costs reported in Pacific's January 13, 1997 cost submission reduces the total of unassigned shared family costs by approximately $500 million.

24. To the extent an LEC continues to sell services to its end-users, the LEC will be able to recover reasonable retail costs in the price of services sold to such end-users.

25. One of the objectives in unbundling local exchange networks is to eliminate cross-subsidies between services.

26. Owing to the large number of shared family cost categories applicable to the shared family costs reported by Pacific, the TSLRIC studies approved in D.96-08-021 have proven less helpful than originally contemplated for detecting cross-subsidization between services.

27. At the January 28, 1997 PHC, counsel for AT&T and MCI stated that their respective clients were prepared to have Pacific's January 13, 1997 cost study submission weighed against Version 2.2.2 of the Hatfield Model.

28. The cost studies submitted by GTEC on September 15, 1997 will be evaluated against Version 4.0 of the Hatfield Model.

29. In D.96-10-066, this Commission weighed an earlier version of the Hatfield Model against Pacific's CPM.

30. The assumptions about distribution cable lengths for low-density CBGs in Version 2.2.2 of the Hatfield Model cause Version 2.2.2's average per-unit loop costs for low-density areas to be substantially overstated in relation to Pacific's actual loop lengths in such areas.

31. The network modeled by Version 2.2.2 of Hatfield will not work for distribution lengths beyond 18,000 feet without additional electronics, the costs of which are not assumed in Version 2.2.2.

32. Version 2.2.2 relies on New Hampshire data to develop the factor that it uses to estimate switch maintenance expense.

33. Version 2.2.2 of Hatfield does not have enough user-settable inputs to model all of the asset lives adopted in D.96-08-021.

34. By using a 20-year asset life for both copper and fiber feeder, despite the separate asset lives for copper and fiber adopted in D.96-08-021, Version 2.2.2 understates Pacific's depreciation by about $100 million annually.

35. Version 2.2.2 of Hatfield assumes that two-thirds of all outside plant will be shared with other utilities 100% of the time in each density zone.

36. The effect of accepting Version 2.2.2's assumptions about outside plant sharing would be to reduce Pacific's total loop costs by about $700 million.

37. In specifying inputs for Version 2.2.2, AT&T and MCI assumed, in specifying investment per line, that the hypothetical carrier modeled by Version 2.2.2 would be able to purchase all of its digital switches at the deepest discount available from switch manufacturers.

38. The 1994 NBI survey of digital switch prices indicates that on a per-line basis, switch vendors charge more for add-on lines than for new or replacement lines.

39. The FCC's definition of the switching UNE is broader than the definition of switching that governed the 1996 pricing hearings in this docket.

40. AT&T, MCI, and other parties were granted access to the SCIS model pursuant to the terms of an ALJ Ruling issued in this docket on February 24, 1997.

41. The discounts for switch purchases assumed in SCIS runs have a linear relationship to SCIS outputs.

42. Pacific acknowledges that it made significant errors in modeling switch investment via SCIS runs, and in determining switch vendor prices.

43. The 1995 NBI survey of digital switch prices indicates that the average price per switched line assumed by Pacific is somewhat above the average price per switched line that RBOCs will pay during the 1990-1999 time period.

44. Of the $1 billion reduction in shared and common costs reported in Pacific's January 13 cost studies (as opposed to the TSLRIC studies approved in D.96-08-021), $500 million is attributable to the assignment of shared family expenses directly to UNEs, and $500 million is attributable to the removal of shared family expenses classified as retail.

45. The argument of AT&T and MCI, that $218 million of the shared and common costs reported by Pacific in its January 13 studies should be considered volume sensitive because such costs can be assigned to UNEs under a "headcount loadings" approach, is virtually identical to an argument rejected in D.96-08-021.

46. D.96-08-021 rejected regression analyses as a valid basis for developing factors with which to assign common costs to network elements.

47. Of the $500 million in shared family costs that Pacific assigned directly to UNEs in its January 13 cost studies, about $75 million represented software RTU fees, all of which Pacific assigned to the call set-up function; i.e., to usage.

48. In defining the switching UNE in the First Report and Order, the FCC reasoned that vertical switching features are provided through the combination of hardware and software that comprise the switch, and thus can be considered features and functions of the switch.

49. There is no empirical evidence to support the assumption that in a forward-looking environment, an LEC such as Pacific will be able to avoid substantial amounts of overhead related to its retail operations.

50. It is not apparent from Pacific's January 13 cost study submission why it was not able to assign substantially all PIM expenses directly to network elements and services.

51. In order to develop the generic loop costs required by the TELRIC methodology, Pacific had to rely upon a weighted average of its total population of loop lengths, which is the most important determinant of loop costs.

52. Pacific used a sample from its LFACS data base to develop the weighted average described in Finding of Fact (FOF) No. 51.

53. At the time Pacific developed its sample, LFACS had "cable make-up" data only for designed circuits, so loops for private lines and special access service tended to predominate, along with very long switched service loops.

54. Zero-length loops are loops that an LEC's customer provides.

55. The statewide average loop length computed from the complete universe of loops represented in Pacific's January 13 cost study is about 11, 600 feet, whereas the statewide average loop length shown in Pacific's TSLRIC studies is about 11, 650 feet, and in Version 2.2.2 of Hatfield, 11,889 feet.

56. Loop lengths from LSANCA02, a large Los Angeles wire center, are significantly underrepresented in LFACS.

57. Product management expenses are non-volume sensitive expenses incurred to manage and support UNE products such as unbundled loops.

58. Facilities-based CLCs are likely to have in their own equipment, the trouble-isolating capabilities that are provided by the jack panels Pacific has included in its design for cross-connects.

59. The signal regeneration equipment that Pacific has included in its design for cross-connects is needed only when cross-connects are unusually long, which is about 10% of the time.

60. Four-wire loops have traditionally been used on Pacific's system only where voice service was provided over very long loops.

61. Because of improved performance made possible by compression technologies, four-wire loops are expected in the future to be a competitive substitute for ISDN links and other forms of Internet access technology.

62. The disparity that Pacific has reported in the cost of four-wire loops versus the cost of two-wire loops is significantly larger than the cost disparity suggested by loop prices in other states, such as New York.

63. The capacity of DS-1 and DS-3 entrance facilities, which are comprised of fiber, is nearly 100%.

64. Some costs, such as those for loops, exhibit wide differences depending on the geographic area being served.

65. Geographic deaveraging refers to a situation in which the prices for telecommunications services or elements differ from geographic region to region, depending on the cost of serving the region in question.

66. The six zones in Pacific's "revenue zone" proposal for geographic deaveraging are based principally on the total billed revenues for business services in each zone, rather than on differences in the costs of serving the zones.

Conclusions of Law

1. Because the parties need access to information that has been designated by Pacific as confidential and competitively-sensitive in order to assess some of the adjustments we are ordering to Pacific's cost studies, the precise details of the adjustments involving such information should be set forth in a separate CRD for Pacific. This CRD will be available only to those parties who have signed an

appropriate nondisclosure agreement with Pacific, and to parties who file a motion under Commission Resolution ALJ-164 and persuade the ALJ that notwithstanding the absence of such a nondisclosure agreement, the moving party should be granted access to the CRD on appropriate terms and conditions.

2. Under the decision on the merits in *Iowa Utilities Bd. v. F.C.C.*, setting UNE prices based on a long-run incremental cost methodology would not, on its face, constitute a "taking" under the Fifth Amendment to the United States Constitution.

3. The TSLRIC methodology adopted in D.95-12-016, and the TELRIC methodology set forth in the First Report and Order, are both valid long-run incremental cost methodologies.

4. The decision on the merits in *Iowa Utilities Bd. v. F.C.C.* is consistent with the rulings on the "pricing rules" and the "pick and choose" rule set forth in the October 15 Stay Order.

5. Under the decision on the merits in *Iowa Utilities Bd. v. F.C.C.*, the FCC lacks statutory authority to compel the States to adopt the TELRIC methodology.

6. Under the decision on the merits in *Iowa Utilities Bd. v. F.C.C.*, this Commission is not obliged to, but has the discretion to, adopt the TELRIC methodology in whole or in part.

7. The decision on the merits in *Iowa Utilities Bd. v. F.C.C.* upholds the authority of the FCC to prescribe the list of network elements to be unbundled that is set forth in 47 C.F.R. § 51.319, including OSS.

8. The TELRIC methodology is preferable to the TSLRIC methodology because under TELRIC, the total amount of unassigned shared and common costs is reduced.

9. The TELRIC methodology is preferable to the TSLRIC methodology because under TELRIC, CLCs that purchase UNEs from incumbent local exchange carriers (ILECs) do not have to pay the ILEC's costs associated with providing retail service, which represent a barrier to entry into the local exchange market.

10. The TELRIC methodology is preferable to the TSLRIC methodology because under TELRIC, it is easier to detect cross-subsidization, owing to the reduced number

of shared family cost categories brought about by making elements rather than services the "cost object".

11. Pacific should be required to include, in its G.O. 96-A advice letter filing following the effective date of this decision, an exhibit that shows, separately for such UNE, which of the 20 shared cost families identified by Pacific include such UNE.

12. Until the completion of supplementary pricing hearings, it would not be appropriate to decide whether to adopt the rigid pricing rules set forth in paragraphs 696 and 709 of the First Report and Order.

13. In the upcoming supplementary pricing hearings, it is appropriate to hear evidence (subject to the usual powers and discretion of the ALJ to admit or deny evidence) on (1) the aggregate level of demand for each UNE, (2) the demand elasticity for each UNE, and (3) whether the markup over the TELRIC costs adopted in this decision should be uniform for all UNEs, or should vary from network element to network element.

14. Version 2.2.2 of the Hatfield Model is the version that should be considered in this phase of this proceeding.

15. There are defects in both the structural logic of Version 2.2.2 of Hatfield, and in the assumptions that AT&T and MCI used to obtain the Hatfield outputs that they submitted on January 13, 1997.

16. The assumptions made in Version 2.2.2 of the Hatfield Model about distribution cable lengths, and other matters needed to develop loop costs for low-density CBGs, are unrealistic.

17. The failure of Version 2.2.2 to assume sufficient electronics for distribution lengths beyond 18,000 feet would make the adoption of Version 2.2.2 imprudent.

18. The data on which Hatfield Version 2.2.2 bases its switch maintenance factor should be from a state with demographic and topographic characteristics similar to California's, which the New Hampshire data used in Version 2.2.2 is not.

19. Version 2.2.2's assumption that the costs of outside plant will be shared with two other carriers in all density zones, 100% of the time, is unrealistic.

20. It would be inappropriate to adopt Version 2.2.2 of the Hatfield Model for the purpose of estimating the forward-looking costs of Pacific's system.

21. The forward-looking costs of Pacific's system should be estimated using the cost studies submitted by Pacific on January 13, 1997 (as subsequently corrected), subject to the adjustments ordered by this decision.

22. The assumption that AT&T and MCI made in specifying inputs for Version 2.2.2, that the hypothetical carrier modeled therein would be able to purchase all of its digital switches at the deepest discount available from switch manufacturers during the life-cycle for such switches, is unrealistic.

23. Pacific should be required to correct via an advice letter filing all of the errors that it acknowledges were made in its SCIS modeling of switching investment and in the determination of switch vendor prices.

24. In making the corrections described in Conclusion of Law (COL) 23, Pacific should be required to quantify each of the errors set forth in Attachment B to the March 17, 1997 declaration of Catherine Petzinger that Pacific concedes it made.

25. Pacific should be required to correct, via a G.O. 96-A advice letter filing, all of the other errors that Pacific has acknowledged in its TELRIC studies.

26. The Commission may properly take official notice of the average switch prices paid by ILECS shown in the 1995 NBI study.

27. The AT&T-MCI assumption that Pacific should be able to purchase 90% of its digital lines at the new or replacement price is predicated upon an unrealistic case in which all switches are replaced at the deepest discount available under Pacific's switching contracts.

28. The AT&T-MCI assumption that Pacific should be able to purchase 90% of its digital lines at the new or replacement price is predicated upon an unrealistic assumption that digital switches are mere hardware that is fully depreciated within 10 years; in fact, for investment purposes, digital switches are combinations of hardware and software that demand continued investment over a period of at least 15 years.

29. The effect of adopting the AT&T-MCI assumption that Pacific should be able to purchase 90% of its digital lines at the new or replacement price would be to require

Pacific to bear nearly the entire expense of line capacity added to serve customer growth, including growth attributable to UNE purchases by CLCs.

30. It would be unfair to require Pacific alone to bear the burden of such additional investment for growth in digital lines.

31. Subject to the corrections set forth in COL 23 and 24, Pacific's assumption that 40% of its digital lines will be purchased at the new or replacement price, and 60% at the growth or add-on price, is reasonable and should be approved.

32. Subject to the corrections set forth in COL 23 and 24, the rest of Pacific's assumptions about switch investment expense, as set forth in its SCIS modeling, are reasonable and should be approved.

33. $218 million in shared and common costs reported by Pacific, which AT&T and MCI argue should be assigned to UNEs on the basis of headcount loadings, are not volume-sensitive merely because they vary with the size of the firm.

34. It would not be appropriate to depart from the conclusion in D.96-08-021 that regression analyses should not be used to develop a headcount loading or other factor for the purpose of assigning shared or common costs.

35. Pacific properly concluded that the $218 million in costs challenged by AT&T and MCI were non-volume sensitive, and should therefore be treated as shared or common costs.

36. Pacific should be required to reassign switch RTU and related expenses to all of the functions and features of the switch, including the call set-up function, holding time, ports and features and tandem switching sub-elements.

37. In the upcoming supplementary pricing hearings, Pacific should be required to show why all of the "spare" fiber capacity costs should be assigned to entrance facilities.

38. It would be illogical to conclude that the retail component of common costs cannot be identified because the costs are common to both resale and wholesale services, whereas retail costs that are shared among a family of services can be identified.

39. Pacific should be required to exclude as retail-related, $68 million of the common costs it reported in its January 13 cost studies.

40. Pacific should be required to submit additional justification for its decision not to assign substantially all PIM expenses to network elements and services.

41. The clustering of statewide average loop lengths described in FOF 55 makes it appropriate to use Pacific's January 13 loop study for the purpose of determining statewide average loop costs, whatever the theoretical problems associated with Pacific's sampling techniques for LFACS.

42. Pacific should not be required to add zero length loops back into its study.

43. Pacific should be required to include in its loop study three of the four wire centers that Pacific concedes were unintentionally left out.

44. In adjusting LFACS, Pacific should be required to use average loop length data by service from SNFCCA01, a large San Francisco wire center, as a proxy for data from LSANCA02.

45. Pacific should compute product management expenses for unbundled loops, based on a weighted average of business, Centrex, and Private Branch Exchange expenses and demand volumes. The total monthly product management expense calculation is set forth in the CRD.

46. Pacific should be required to adjust downward the product management expenses for all other UNEs by 30.8%. The remaining product management expenses should be unitized based on the demand surrogates supplied by Pacific. The details of these computations are set forth in the CRD.

47. The cost of jack panels should not be included in Pacific's UNE cross-connect unless the purchasing CLC wants that feature.

48. The cost of signal regeneration equipment should not be included in Pacific's UNE cross-connect unless the purchasing CLC wants that feature.

49. In its supplementary pricing testimony, Pacific should state its proposed prices for jack panels and signal regeneration equipment separately from its proposed prices for UNE cross-connects. Such pricing proposals should be based upon the costs set forth in the CRD.

50. The record is insufficient to determine at this time whether it is feasible to unbundle the DAX from the EISCC.

51. Provided that Pacific demonstrates that all of the TSLRIC loop-related repair expenses on which it is relying have been reduced by 14%, as required by the Pacific CRD adopted in D.96-08-021, then Pacific's weighted-average approach for computing unbundled loop operating expenses, as reflected in Pacific's January 13, 1997 cost studies, is appropriate.

52. Pacific should be required to furnish, in the G.O. 96-A advice letter it files after the effective date of this decision, additional justification for the costs it claims for interface connections and plug-in devices in connection with its 4-wire loop pricing proposal.

53. Before Pacific's proposal to price 4-wire copper loops separately from 4-wire fiber loops can be adopted, Pacific should be required to establish costs for 4-wire switched loops as opposed to 4-wire loops that terminate on a DAX.

54. Pacific should divide the total of non-volume sensitive costs shown in its white pages directory listing cost study by 12.

55. Pacific should be required to remove approximately $1 million from its cost study for white pages directory listings, as shown in the CRD attached to this decision. However, Pacific may properly include in its study the $3 million in Customer Guide costs that do not relate exclusively to Pacific products and customer service.

56. The fill factor that Pacific should assume for DS-1 and DS-3 entrance facilities is 62%.

57. With the corrections and adjustments ordered by this decision, the cost studies submitted by Pacific on January 13, 1997 (as subsequently corrected), adequately comply with the TELRIC principles adopted herein, and can be used to set prices for the unbundled network elements to be offered by Pacific.

58. Under the decision on the merits in *Iowa Utilities Bd. v. F.C.C.*, this Commission is not obliged to adopt geographically-deaveraged prices for UNEs.

59. If the Commission were to permit geographic deaveraging of UNE prices, but allowed it for less than all affected elements or services, the resulting distortions in

pricing signals could be worse than the situation brought about by charging statewide-average prices for UNEs.

60. Because it is not based on differences in the costs of serving the zones, Pacific's "revenue zone" proposal for geographically-deaveraging UNE prices should be rejected.

61. Because its internal logic for geographic deaveraging would exacerbate the tendency of Hatfield Version 2.2.2 to produce unreasonably high loop costs for rural areas, Version 2.2.2 does not furnish a suitable basis for geographically-deaveraging UNE prices.

62. The UNE prices to be set for Pacific in the upcoming supplementary pricing hearings should be statewide-average prices.

63. Pacific should be required to submit, as part of its GO 96-A advice letter filing following this decision, a summary of t he costs approved herein for each UNE.

INTERIM ORDER

IT IS ORDERED that:

1. Within 15 days after the effective date of this order, Pacific Bell (Pacific) shall submit to the Commission's Telecommunications Division (TD) for its approval, and shall serve upon all parties with whom Pacific has entered into a nondisclosure agreement consistent with the terms of the November 16, 1995 Administrative Law Judges' Ruling in this docket (Appropriate Nondisclosure Agreement), an advice letter consistent with the terms of General Order (G.O.) 96-A that contains the adjustments to Pacific's Total Element Long Run Incremental Cost (TELRIC) studies required by Conclusions of Law (COL) 23, 24, 40, 44, 52 and 63 of this order and the related materials set forth in the Compliance Reference Document (CRD) applicable to Pacific. Upon request of the TD, Pacific shall produce workpapers that show how it has made all of the required adjustments, and shall serve such workpapers upon all parties who have executed an Appropriate Nondisclosure Agreement. This advice letter shall be subject to protest in accordance with G.O. 96-A.

2. Within 15 days after the effective date of this order, Pacific shall submit to the TD for its approval, and shall serve upon all parties with whom Pacific has entered into an Appropriate Nondisclosure Agreement, a compliance filing that sets forth all of the adjustments to Pacific's TELRIC studies required by this decision, as set forth above and in the Pacific CRD, except for those adjustments described in Ordering Paragraph (OP) 1. The compliance filing required by this OP shall not be subject to protest. Upon request of the TD, Pacific shall produce workpapers that show how it has made all of the adjustments required by this OP, and shall serve such workpapers upon all parties with whom it has entered into an Appropriate Nondisclosure Agreement.

3. The pages from the deposition transcript concerning SCIS that are set forth on Appendix B to this decision are admitted in the record. Exhibits 4, 5, 7, 10 and 12 from the aforesaid SCIS deposition are also admitted into the record and shall be filed under seal. The pages from the transcript of the "panel" deposition of Richard Scholl and Scott Pearsons that are set forth on Appendix B are admitted into the record. In all other respects, the March 18, 1997 motions of AT&T Communications of California, Inc. (AT&T) and MCI Telecommunications Corporation (MCI) to (a) include deposition transcripts concerning Pacific's cost studies in the record, and (b) to file certain deposition transcripts under seal, are denied.

4. The January 20, 1998 motion of Cox California Telcom, Inc., and the joint motion of the same date by AT&T and MCI, to file one day late their respective opening comments on the December 23, 1997 draft decision in this docket, are hereby granted.

This order is effective today.

Dated February 19, 1998, at San Francisco, California.

RICHARD A. BILAS
President
P. GREGORY CONLON
JESSIE J. KNIGHT, JR.
HENRY M. DUQUE
JOSIAH L. NEEPER
Commissioners

Table of Contents

INTERIM DECISION ADOPTING COST METHODOLOGY, EVALUATING THE HATFIELD COMPUTER MODEL, AND DECIDING OTHER ISSUES RELATED TO COST STUDIES OF PACIFIC BELL'S SYSTEM 2

I. BACKGROUND OF TODAY'S DECISION 3

A. Decision 96-08-021 And The Events Leading Up To The December 18, 1996 ALJ Ruling 3

B. Owing To The Creation Of A Separate OSS/NRC/Changeover Phase, Today's Cost Determinations Will Not Allow Us To Develop Final UNE Prices In The Upcoming Supplementary Pricing Hearings 11

C. The Eighth Circuit's Ruling On The Merits In *Iowa Utilities Board v. FCC* 12

II. SHOULD THE COMMISSION ADOPT THE TSLRIC OR TELRIC METHODOLOGY AS THE BASIS FOR DETERMINING THE COSTS OF UNBUNDLED NETWORK ELEMENTS? 17

A. The TELRIC Methodology Is Preferable Because It Minimizes the Total Of Unassigned Shared Family and Common Costs 19

B. The TELRIC Methodology's Elimination Of Retail Costs From The Price Of Unbundled Network Elements Is A Factor In Its Favor 20

C. The TSLRIC Studies Approved in D.96-08-021 Make the Detection Of Cross-Subsidization Difficult 22

III. SHOULD THE COMMISSION USE PACIFIC'S TELRIC STUDIES OR VERSION 2.2.2 OF THE HATFIELD MODEL FOR THE PURPOSE OF DETERMINING PACIFIC'S FORWARD-LOOKING COSTS? 24

A. Should The Commission Evaluate Version 2.2.2 Or Version 3.0 Of Hatfield? 24

B. Is Version 2.2.2 A Sufficient Improvement Over the Version of Hatfield Evaluated In Our Universal Service Decision, D.96-10-066? 26

C. Hatfield 2.2.2 Does Not Fairly Model Loop Costs In Low-Density Areas 28

1. Pacific's Position 28

2. AT&T's and MCI's Position 29

3. Discussion 30

D. Hatfield 2.2.2's Network Design Assumptions Are Not Consistent With Its Transmission Parameters 30

E. Version 2.2.2 Understates Switch Maintenance Expense 31

1. Positions of the Parties 31

2. Discussion 33

F. Version 2.2.2 Does Not Model Depreciation In A Manner Consistent With D.96-08-021 33
1. Positions of the Parties 33
2. Discussion 34
G. Hatfield 2.2.2's Treatment Of How Outside Plant Is Shared Is Not Reasonable. 35
1. Positions of the Parties 35
2. Discussion 36
H. AT&T and MCI Did Not Assume Reasonable Investment Per-Line When They Specified Their Input Assumptions For Version 2.2.2 36
1. The LECs' Position 37
2. Position Of AT&T and MCI 39
3. Discussion 39
I. The Infirmities Of Hatfield 2.2.2 Require That UNE Costs Be Set Using Pacific's TELRIC Studies, After Appropriate Adjustments Are Made 40
IV. HAS PACIFIC CORRECTLY CALCULATED ITS SWITCHING INVESTMENT UNDER THE TELRIC METHODOLOGY? 41
A. Background Concerning Use of the SCIS Model 42
A. The Parties' Contentions Concerning Pacific's Alleged Overstatement Of Switching Costs 44
B. Pacific's Position 45
C. Discussion 46
V. HAS PACIFIC APPROPRIATELY REASSIGNED SHARED AND COMMON COSTS IN ITS NEW COST STUDIES TO CONFORM WITH TELRIC PRINCIPLES? 52
A. Has Pacific Treated As Shared and Common, Costs That Are, In Fact, Volume-Sensitive, And Thus Properly Assignable To Individual Network Elements? ... 53
1. Position of AT&T and MCI 53
2. Pacific's Position 55
3. Discussion 56
B. Has Pacific Assigned An Unreasonably Large Fraction Of "Shared Family" Costs to the Call Set-Up Function? 59
1. Positions of the Parties 60
2. Discussion 60
C. Has Pacific Improperly Included Costs Related to Retail Service In The Total Of Common Costs It Has Reported In Its TELRIC Studies? 62

1. Positions of the Parties 62
2. Discussion 63
D. Pacific Must Provide Additional Justification For Its Treatment Of Programming And Information Management Expenses 64
VI. ARE PACIFIC'S LOOP LENGTH ESTIMATES REASONABLE FOR THE PURPOSE OF DETERMINING LOOP COSTS UNDER TELRIC? 64
A. Description of Pacific's LFACS Data Base 65
B. Positions of AT&T, MCI and the Facilities-Based Commenters 66
C. Pacific's Position 67
D. Discussion 68
VII. HAS PACIFIC CALCULATED THE PRODUCT MANAGEMENT EXPENSES FOR UNBUNDLED NETWORK ELEMENTS IN A REASONABLE MANNER? 71
A. The Position of AT&T and MCI 72
B. Pacific's Position 73
C. Discussion 74
VIII. MISCELLANEOUS ADJUSTMENTS TO PACIFIC'S TELRIC STUDIES ARE NECESSARY FOR CENTRAL OFFICE CROSS-CONNECTIONS, TWO-AND FOUR-WIRE LOOPS, WHITE PAGES DIRECTORY LISTINGS AND DS-1 ENTRANCE FACILITIES 75
A. Are The Costs That Pacific Has Reported For Central Office Cross-Connects Excessive? 75
1. Position of the Facilities-Based Commenters 75
2. Pacific's Position 77
3. Discussion 77
B. Are Pacific's Estimates of Operating Expense For Its Statewide-Average Two-Wire Loop Cost Reasonable? 79
1. Positions of the Parties 79
2. Discussion 80
C. Are Adjustments Necessary to Pacific's Studies for 4-Wire Loops? 81
1. Positions of the Commenting Parties 81
2. Pacific's Position 83
3. Discussion 83
D. Are Adjustments Necessary to Pacific's Studies For White Pages Directory Listings? 85

E. Are Adjustments Necessary to the Fill Factor That Pacific Has Assumed For DS-1 Entrance Facilities? 86

IX. SHOULD PACIFIC'S PRICES FOR UNBUNDLED NETWORK ELEMENTS BE GEOGRAPHICALLY-DEAVERAGED, AND IF SO, WHICH IF ANY OF THE COMPETING GEOGRAPHIC-DEAVERAGING PROPOSALS SHOULD BE USED? ... 88

A. Background 88

B. Description of Pacific's Revenue Zone Approach to Geographic Deaveraging . 90

C. Positions of the Commenting Parties 91

D. Pacific's Position 92

E. Discussion 93

X. COMMENTS ON THE DRAFT DECISION 94

Findings of Fact 94

Conclusions of Law 100

INTERIM ORDER 107

Appendix A
Appendix B

See PC DOCs #12546 for Appendix A.

See formal file for App. B.